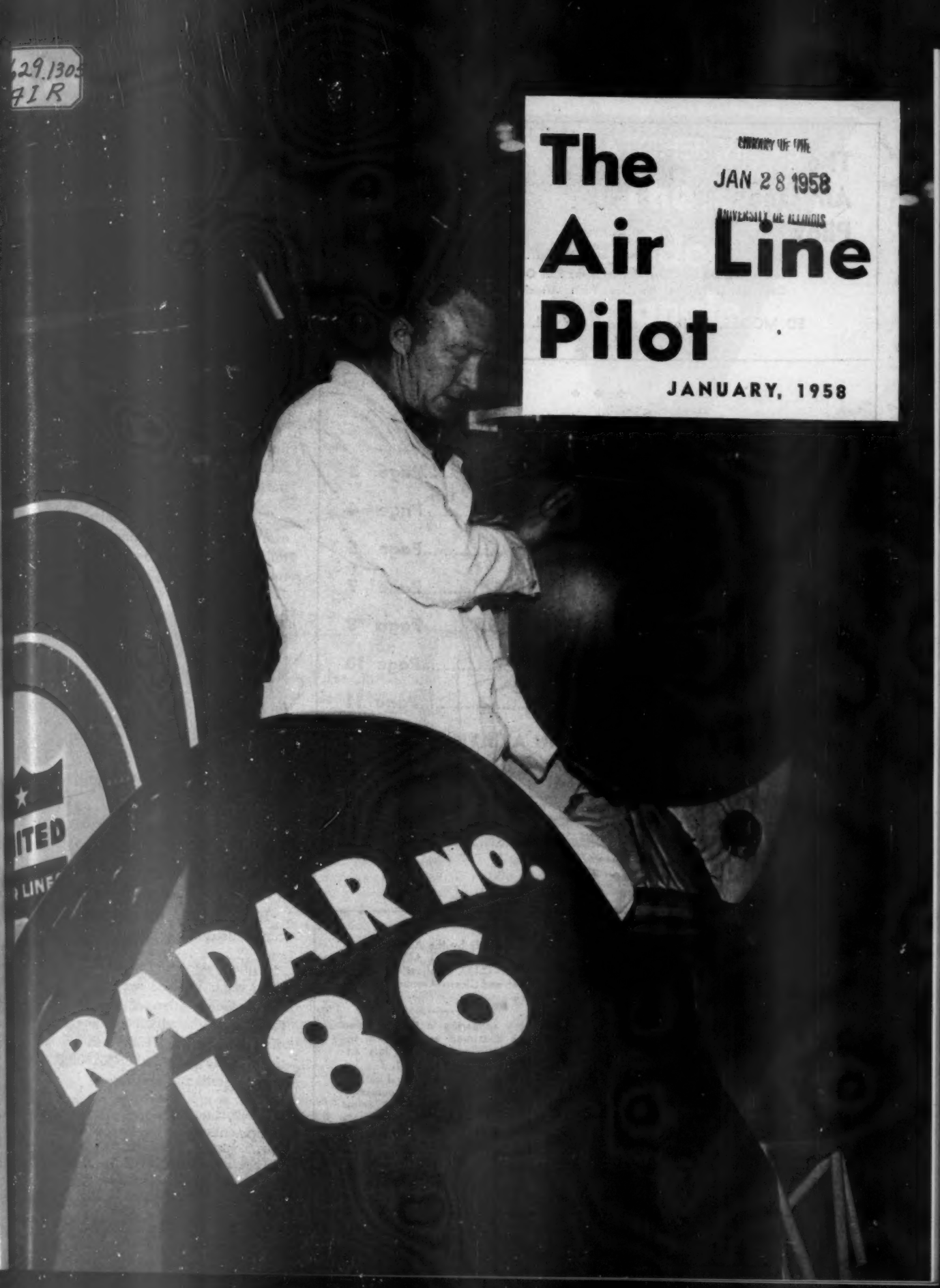
629.130
7IR

The Air Line Pilot

LIBRARY OF THE
JAN 28 1958
UNIVERSITY OF ILLINOIS

JANUARY, 1958



The Air Line Pilot

Vol. 27, No. 1

January, 1958

Entered as Second Class Matter at the Post Office at Chicago, Ill.
Copyright 1958, by Air Line Pilots Association, International.
ED MODES, Editor AL LEACH, Asst. Editor

◆ ◆ ◆

IN THIS ISSUE

THE "GOLDEN TRIANGLE".....Page 3

AVIATION CHUCKLES: CARTOON.....Page 4

REPORT ON DANGEROUS CARGO.....Page 5

A PILOT ASKS: "HOW HOT ARE WE?".....Page 7

SOME NOTES ON GROUND EFFECT.....Page 8

CREWMANSHIP .....Page 10

ALONG THE LINE .....Page 11

DIGEST OF NEWS AND VIEWS IN AVIATION..Page 13

ALPA AIRCRAFT EVALUATION: PICTURE STORY .....Page 16

CONSTANT MEMORIAM .....Page 23

◆ ◆ ◆

Clarence N. Sayen
President
Grant M. LeRoux
First Vice-President
Kay McMurray
Executive Vice-President
R. L. Tuxbury
Secretary
D. J. Smith
Treasurer

REGIONAL VICE PRESIDENTS

C. C. Spencer, Jr. ..... Region I
R. J. Rohen ..... Region II
C. E. Luther ..... Region III
D. Halperin ..... Region IV
H. B. Anders ..... Region V

Larry Cates
Legislative Representative

Published Monthly by the Air Line Pilots Association, International, Affiliated with A. F. of L.-C.I.O. Publication offices: 55th Street and Cicero Avenue, Chicago, 38, Illinois.

Advertising appearing in this magazine cannot be construed as being an endorsement by the Air Line Pilots Association or The Air Line Pilot.

Opinions expressed by individual authors in The Air Line Pilot do not necessarily represent official ALPA opinion, unless specifically so stated, and therefore should not be construed as such.

Annual Subscription, $2.50.

66

On the Cover

United Air Lines has completed the largest airborne-radar equipment installation in commercial aviation history.

It is the only major airline to operate with radar on every airplane.

Installation of C-band radar on the final and 186th plane in the United fleet wound up a $5,000,000 program started two years ago.

The new flight aid enables pilots to examine cloud formations as far as 150 miles away and so avoid potential turbulence.

It also shows surface features and can be used as an aid in navigation.

United conducted pioneer tests of C-band radar in 1953, working with the Radio Corporation of America. This research led to a $2,500,000 purchase of radar units in 1955, with an additional outlay of another $2,500,000 to cover installation costs.

The airline uses Douglas and Convair equipment.

(See report on United evaluation of radar usage in News Digest Section on Page 13.)

A DISPATCHER VIEWS The Golden Triangle

By Robert E. Commerce
President, Air Line Dispatcher's Assn.

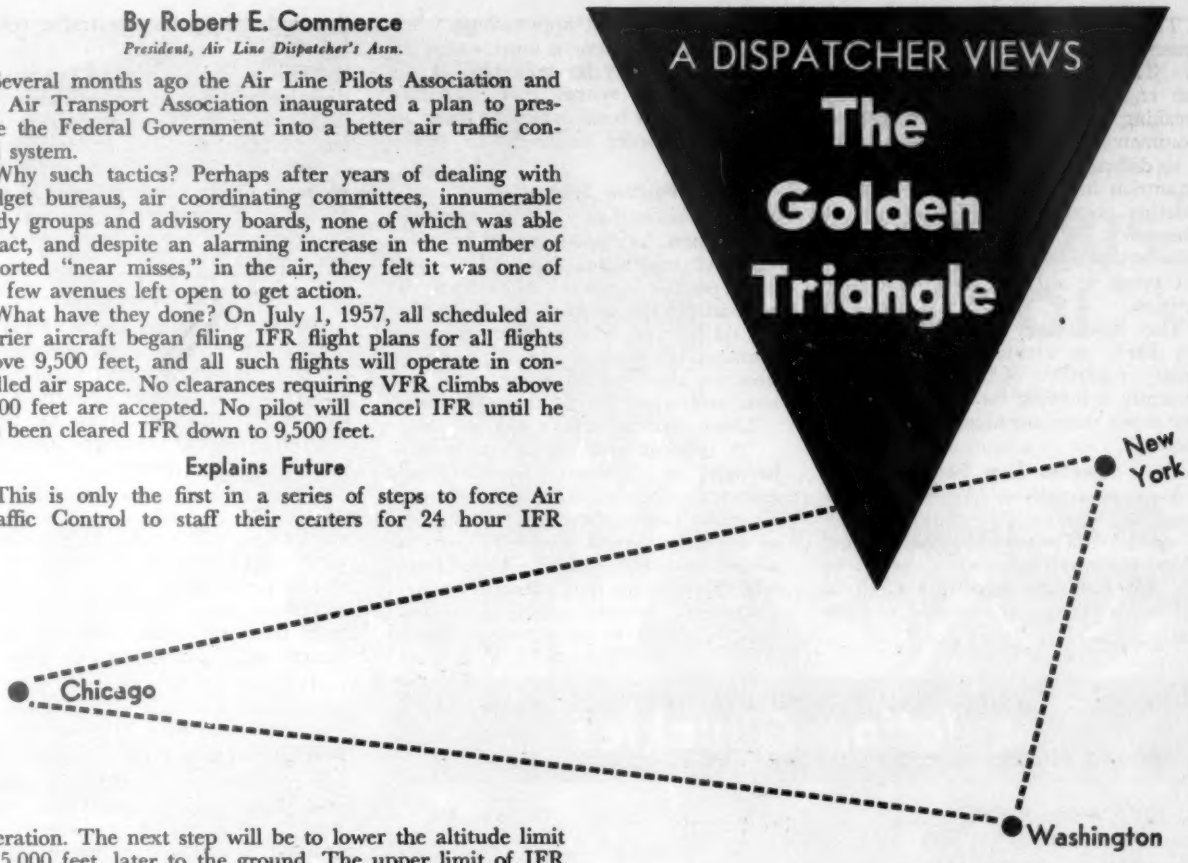
Several months ago the Air Line Pilots Association and the Air Transport Association inaugurated a plan to pressure the Federal Government into a better air traffic control system.

Why such tactics? Perhaps after years of dealing with budget bureaus, air coordinating committees, innumerable study groups and advisory boards, none of which was able to act, and despite an alarming increase in the number of reported "near misses," in the air, they felt it was one of the few avenues left open to get action.

What have they done? On July 1, 1957, all scheduled air carrier aircraft began filing IFR flight plans for all flights above 9,500 feet, and all such flights will operate in controlled air space. No clearances requiring VFR climbs above 9,500 feet are accepted. No pilot will cancel IFR until he has been cleared IFR down to 9,500 feet.

Explains Future

This is only the first in a series of steps to force Air Traffic Control to staff their centers for 24 hour IFR operation. The next step will be to lower the altitude limit to 5,000 feet, later to the ground. The upper limit of IFR flight planning is infinity. This plan does not involve any new Civil Air Regulations, or any change of action on the part of Air Traffic Control.



The only area affected by the trial plan is the so-called "Golden Triangle," that area between New York, Chicago, Washington, D. C., and New York. It involves the New York, Pittsburgh, Cleveland, Chicago, Detroit, and Washington traffic control centers.

Since the personnel complements in control centers are predicated on strip-count of IFR fix postings, it would seem that the logical way to get the necessary people is for nobody to file VFR. The jump in fix postings would automatically call for more positions and a large dose of IFR weather would not catch a center with an inadequate number of qualified controllers.

Of course, military, private and corporation aircraft are not bound by this agreement. If they were, it might result in more positive control, but on the other hand the delays might get entirely out of bounds. It could result in the CAA and the Budget Bureau changing the existing criteria for personnel complements with the result that the project would go down the drain.

Impact On CAA

What impact has the program had on the CAA? For one thing, since the calamitous Grand Canyon accident which pointed up the fallacies of "see-and-be-seen," control they have been authorized complements that fulfilled their fondest dreams. Twenty five hundred new people have been hired in the last year. Prior to this, the best they could hope for was one quarter this amount. This "barn door" strategy nevertheless fails to meet the need.

CAA men bewail the fact that people who should know better do not realize that it takes from one and a half to two years for a controller to become worth his salt. They have the bodies, but they can't fill the positions, not yet at least. The benefits may be a long time in showing up.

Coupled to the personnel increase is a long range program of installing peripheral communication stations along the airways, and eventually full radar coverage. The former is at least a year away and the radar program is clear out of sight.

Cites ATC Delays

Within the "Golden Triangle," itself, the aircarrier pilots have been filing IFR flight plans in VFR weather for a long time. Not only have near-misses made them wary, but also most direct flights are over controlled airways anyway. The centers' strip counts have not ballooned, but delays in marginal weather haven't either. The most discouraging thing to a dispatcher in this regard is the long ATC delay in good weather, that is to say 10,000 feet and 4 miles, for example.

The CAA still remains an agency of the Department of Commerce. While Congress dickers over the formation of a three man airways modernization board, the Edward P. Curtis Committee, which made a study of the problem for President Eisenhower, recommended a separate federal agency for aviation.

The hope for a separate agency becomes dimmer, largely because of politics. There are forces that will fight to the end to prevent the CAA from breaking loose from the Department of Commerce. One reason the CAA found it so difficult to get appropriations for expansion in the past was the lack of aviation minded men high enough in commerce. It stands to reason that those sympathetic to the railroads are not going to aid and abet their competition.

The Eisenhower Administration is not likely to create another federal agency, regardless of the need, when it presently is looking for means of shutting down many agencies now in existence.

Quotes Sam Saint

A recent article in "American Aviation," by veteran Pilot Sam Saint is of special interest to dispatchers and pilots. He was discussing a speech by Mr. Harmar Denny of the CAB in which Mr. Denny is reported to have said:

"The day is fast approaching when the federal government must accept direct responsibility for operating an air traffic control system that is legally empowered to issue orders to pilots in the air in order to insure air traffic safety."

Positive Separation

Saint claims that pilots, in their constant quest for safety, are asking for "positive separation," from ATC and not "positive control." Let there be no mistake, this attempt on the part of the ALPA and ATA to force the government into better and safer service does not stem from a desire to be told how and where to fly their airplanes.

Listen to Mr. Saint's wise words.

"A tremendously significant twist is brought in, however, when certain technical planners attempt to convert air traffic control from a service agency to one that would dictate when and where aircraft could fly. Col. Denny told this reporter that ultimately, when congestion becomes acute, pilots will have to divert to an alternate chosen and ordered by the air traffic control system.

"This would usurp pilot prerogative, dispatch and operational authority and impose a form of arbitrary flow control that airline pilots and airline operators will resist to the death, in fact, no sane airline passenger should want to fly in an airplane whose real captain was sitting at a control board on the ground.

Real Threat

"This is not some vague threat for the distant future. Under the guise of military planning, several manufacturers are at this moment submitting bids for the development of an air traffic control electronic computer applicable to the common system.

"If pilots and dispatchers will submit to the operational orders of the new control system, the proposed computer might be made to work. If the airlines get stubborn and insist on making their own operational decisions (and they will) the computer development will have to start over.

"It is beyond the realm of credibility to think that contract negotiation for this computer is in progress without coordination with the Curtis Program."

It appears to me that the airline pilots have said to the CAA, "look here, they are reporting three to four hundred near-misses in every 90 day period. If you can't get the people and facilities to save our necks, we'll get 'em for you." Officialdom replies, "shucks, fellers, don't worry about a thing, we'll take over the whole works."

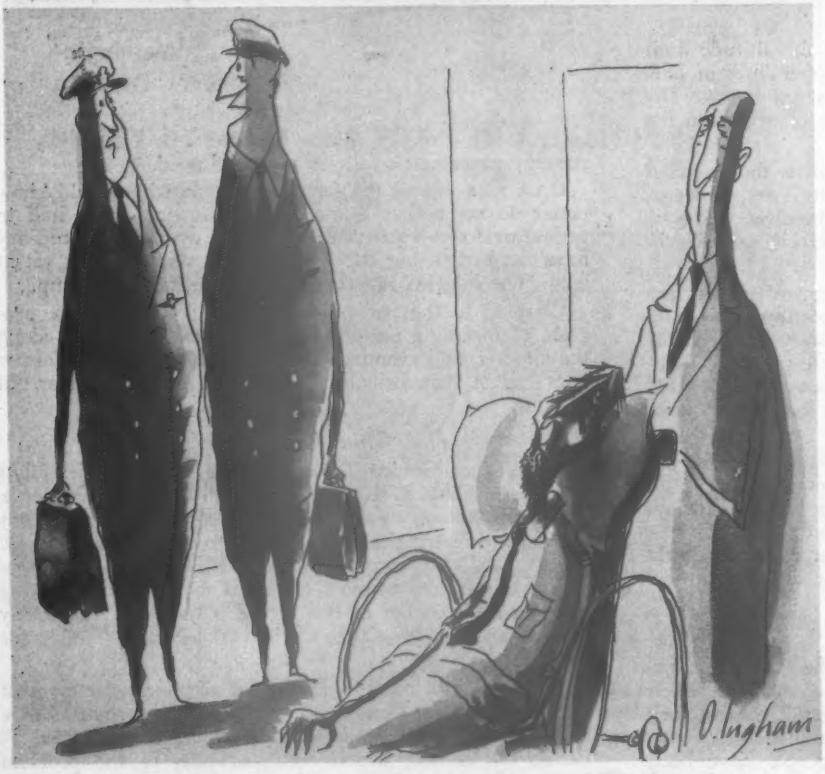
Middle Ground

There surely must be a middle ground solution. Must it always be a feast or a famine? For years, the far sighted men in the CAA planned to break the log-jam with programs that would grow with expanding traffic. In 1945, some dedicated CAA men devised a system for separation of all IFR traffic, on or off airways, by a grid-coordinate method.

That, and many similar efforts were flushed away by lack of funds. The ATA has had the vision for years to demand that ATC staff its centers with a "fire house roster," that is, staffing for IFR weather under all conditions. Now that tragedy has made funds available, let us hope they are spent wisely.

It is a fact that the government is responsive to pressure. When the pressure is for the safety of our passengers, our crews and the equipment of our employers, is there a better cause?

Aviation Chuckles



Him? He's The Smarty Who Was Going To Prove That These Flight Time Limitations Are Quite Reasonable.

That Innocent Looking Package Could Be . . .

DANGEROUS CARGO!

By Capt. Ed. Tappe

Chairman Alpa Cargo Safety Committee

Airline pilots have been concerned for a long time over the hazards associated with the transportation of cargo by air. I dare say there is scarcely a pilot who has flown in airline service for a period of years who does not have some incident to relate wherein the cargo aboard his aircraft could have resulted in a serious accident.

These stories run the gamut from the pilot who kept his revolver trained on a leopard which managed to free himself from his chicken-wire cage, to the experience of the author on whose aircraft a two-quart jar of live polio virus in culture spilled in the companionway, containing enough virus of the Mahoney paralytic strain to kill or cripple an army of a million men.

Study Started

These many incidents resulted in the creation of the Board of Directors of the Air Line Pilots Association at its convention in November of last year of a Cargo Safety Committee to make a comprehensive study of all phases of the transportation of cargo by air as it relates to safety.

This Committee, of which I am chairman, is making as exhaustive a study in this field as our limited facilities will permit. The situation we have found is a disturbing one, and, while many conclusions must await further study, our investigations to date have convinced us that there is much that needs to be done on the part of the airlines, the airline pilots, the CAB, the CAA, and the aircraft manufacturers to minimize the very real hazards which do exist.

Fields of Study

The investigations of our committee led us into many fields:

1. A study of the design and function of present day aircraft and projected aircraft relative to the safe carriage of cargo, with specific reference to the following:

(a) Accessibility of cargo compartments.

(b) Firefighting equipment in cargo compartments, and

Early Studies, Says The ALPA Cargo Safety Committee, Indicate A Disturbing Situation Leaving Much To Be Done To Minimize Very Real Hazards Which Exist.

warning devices incident thereto.

(c) Cargo tie-down provisions.

(d) Floor stress requirements.

(e) Turbulence and lightning strike effects on cargo.

(f) Cargo jettison facilities.

2. A study of the existing regulations of the CAB, the CAA, the Public Health Service, and other regulatory bodies having jurisdiction over the movement of cargo by air, as well as the tariffs and manuals of the airlines.

3. The adequacy of the training of cargo personnel.

4. The cargo handling procedures of the airlines, including the advisability of co-pilots or engineers supervising the loading of cargo.

5. The policies and practices of shipping agents, including the Air Express Division of the Railway Express Agency, the Post Office Department, the International Air Express Agency, and the various air-freight forwarders.

6. The hazards associated with carriage of cargo in high-speed, high-altitude aircraft, including emergency decompression and very high frequency vibration and audio emissions.

Other Fields

As the work of the Committee progressed, other fields of investigation were undertaken, including:

1. The effects of radioactive cargo on pilots.

2. The transportation of firearms in cabins.

3. Bomb hoax calls.

4. Hazards associated with passengers' baggage.

5. Illegal sales practices involving inaccurate cargo weights.

6. Aircraft spraying with injurious compounds.

7. Adequacy of the testing facilities of the CAB and CAA relative to cargo regulations and enforcement procedures.

In the interim report our Committee has made to the President and Executive Committee of ALPA we have discussed these matters in considerably greater detail than time will permit at this seminar. I shall content myself with an abbreviated explanation of some of these subjects so that you may appreciate the general problems involved.

In our final report we shall make recommendations soliciting the support of the Air Transport Association, the CAB and CAA in minimizing at least some of the hazards our investigations have disclosed, and perhaps make recommendations for a legislative approach to problems which may not be readily solved in any other way.

As background information it is desirable to understand something about the source of existing regulations covering the transportation of dangerous articles by air in order to formulate an opinion as to the adequacy thereof.

Cargo History

Long before the advent of cargo transportation by air, of course, the railroads operated under various regulations set up by the Interstate Commerce Commission, and basically the civil air regulations pertaining to the carriage of cargo by air are only an extension of the ICC regulations modified to fit the unique problems presented by air transportation.

Actually the ICC does not have and never did have an adequate testing laboratory of its own wherein ICC personnel could investigate and recommend appropriate regulations regarding the classification of dangerous articles, their packaging, labeling, handling and quantity limitations.

The Commission has relied on the recommendations of the Bureau of Explosives of the Association of American Railroads. The recommendations of this Bureau in the majority of cases are accepted in toto by the ICC and published as regulations for the railroads, motor carriers and inland water ship operators.

Regulation By Reference

Part 49 of the Civil Air Regulations, which governs the transportation of explosives and other dangerous articles in air transportation incorporates, by direct reference, the regulations of the ICC except where they are specifically changed in Part 49. It follows, therefore, that the basic air regulations have actually been established by the Association of American Railroads which does not consider the hazards involved in the carriage of potentially dangerous cargo that are peculiar to air transportation when formulating its recommendations to the ICC.

The airlines have established an organization, Air Cargo Inc., and have authorized their agent, Emery F. Johnson, to publish their cargo tariffs including their Restricted Articles Tariff.

An analysis of these tariffs indicates a wholesale utilization of the ICC regulations with various changes which experience has dictated. The scientific resources available to Air Cargo Inc., consist of the services of one part-time chemist.

It should not necessarily be assumed from this that the Committee is making a wholesale indictment of the whole regulatory policy, for we have no doubt that the CAB is well cognizant of its obligations to the public insofar as the safety of cargo transportation is concerned, and self-interest should dictate the necessity on the part of the airlines to insure, as best they can, that the carriage of cargo is surrounded by adequate regulations to insure safety.

Our point is that the whole philosophy regarding hazards associated with transportation of cargo is developed by the railroads who have no interest in transportation of cargo by air, and only modifications of this basic policy are made by the CAB and the airlines to adapt them to air transportation.

Double Standard

One thing about the regulations which has disturbed the committee is the double standard for safety insofar as the carriage of cargo on passenger and cargo aircraft is concerned. CAR 49.41 provides:

"In addition to the articles accepted for transportation on aircraft carrying passengers, any article acceptable for and packed, marked and labeled in accordance with the ICC regulations for transportation by rail express may be carried in cargo aircraft . . ." with the exception of 34 items which may not be carried at all.

Anything, therefore, which may be carried in a railway express car may be carried in a cargo airplane with very few exceptions. The restrictions applying to passenger aircraft are much more strict. It is apparent, therefore, that the CAB has evolved a philosophy that greater risks may be accepted where the lives of only pilots are involved compared with the risks which may be assumed when passengers are carried.

It is true that if the same restrictions applied to cargo aircraft which apply to passenger aircraft many articles now moving in air commerce could not be carried, with a resultant handicap to development of cargo movements by air.

Our committee likewise appreciates that it is important to the nation as a whole to provide the speed of transportation which only air can offer. If the pilots of cargo aircraft must assume a certain measure of additional risk it would appear logical that they should be surrounded by certain addi-

(Continued on Page 18)

AN AIR LINE PILOT ASKS:

How Hot Are We?

He Wonders: Exactly How Serious Is Exposure To Radiation In The Air Line Pilots' Office?

By 1st Officer J. C. White
UAL

This article will no doubt reflect a somewhat embittered and disillusioned outlook by its writer. Such an outlook, no doubt, stems from a basic fear which people have of things they do not understand.

The subject matter (hang on to your hat) is radio activity in the office. Radiation might be a more desirable and comprehensive word to be used by the layman. However, classification of the mysterious phenomenon seems secondary at this time. My apprehension was brought about by a recent incident which I shall try to reconstruct.

On a recent nonstop flight from Chicago to San Francisco one typical summer afternoon I flew in close proximity to, if not directly under, a purported radio active cloud. The act was not meditated of course, and I am not ready to substantiate a charge that someone was remiss in not passing along pertinent information.

A Victim

Let us just say I was a victim of national defense. The occurrence was while proceeding in accordance with a properly filed flight plan along Victor Airway Number Six, between Rock Springs and Fort Bridger, Wyoming. Weather in the area was scattered thunderstorms with varying layers of clouds and a corresponding variance of visibility.

A chase plane report of the active cloud's existence came to me via a relay through the ground radio station serving that area. To support the report, at least one aircraft of another air line was purported to have been found radio active after flight through the area.

My real jolt came when, after completion of my flight, and upon visiting the Peninsula Hospital, I was informed that no equipment was available in the area for detecting the presence of, nor determining the extent of my contamination. Furthermore, the doctor on duty informed me there was no positive action he could take to alleviate the condition if contamination could be detected.

Minimum First Aid

He suggested, as a precautionary measure, that I might have my uniform cleaned and put aside my shoes for a

(Continued on Page 17)

SOME NOTES ON
Ground Effect

A Phenomenon Of Flying That Happens To Every Pilot But Is Little Understood. Ground Effect Can Be A Lifesaver Or It Can Be A Killer

By Maj. Murray Marks
Office of Safety, Hq 8AF

While ground effect is a flight characteristic about which most pilots have very little knowledge, we all experience its results every time we are at the controls of an airplane. When we consider that this phenomenon affects the aircraft during takeoff and landing, and that both these critical areas account for the largest number of aircraft accidents, it becomes necessary for all pilots to examine the subject to insure complete understanding.

What Is Ground Effect?

Simply stated, in part, it is the change in the airflow over the wings and tail when the aircraft is in close proximity to the ground. This change is caused by the ground surface restricting the vertical component of the airflow which normally flows down from under the wing tip, and then around it to the upper surface of the wing (wing tip vortex). The influence of Ground Effect on wing tip vortex is shown in figure 1A and figure 1B.

This reduced wing tip vortex results in a reduction of "induced drag," an undesirable but unavoidable consequence of producing lift.

Further consideration of the change of airflow by Ground Effect which restrict the vertical component is its influence on the "lift vector." This results in the required lift being produced with a reduction in the downward deflection of the airstream. The downward angle is therefore reduced which results in less induced drag because the lift vector is moved forward. This influence is shown in figure 2A and figure 2B.

It is also interesting to note that the percentage of wing span in relation to the height over the ground has a very definite bearing upon the amount of reduction of induced drag. Comparing two aircraft, of different size wing spans, at the same altitude, the one with the larger wing span will

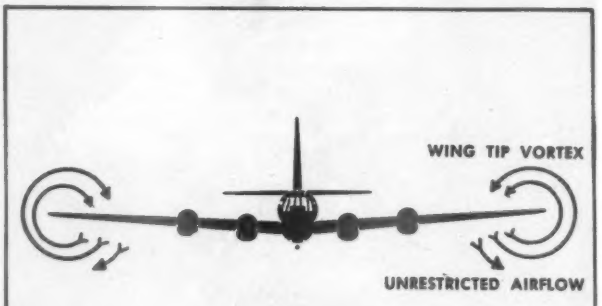


FIG. 1A WING OUT OF GROUND EFFECT

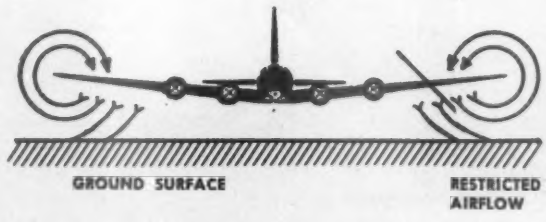
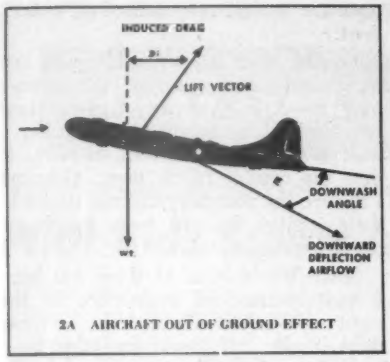


FIG. 1B WING IN GROUND EFFECT



2A AIRCRAFT OUT OF GROUND EFFECT

have more Ground Effect with a greater reduction of induced drag.

For example, an aircraft with a wing span of 60 feet starts round out in landing at an altitude of 10 feet. Due to Ground Effect, it experiences a 33.9 percent reduction of induced drag. Compare this with another aircraft having a larger wing span of 100 feet which starts round out in landing at the same altitude of 10 feet. Due to Ground Effect this aircraft experiences a 50 percent reduction of induced drag. This is an increase of 16 percent reduction of induced drag.

Figure 3 shows the reduction of induced drag due to Ground Effect in reference to the height relationship of the aircraft with respect to the percent of wing span.

Examination of the influence of Ground Effect involves two separate considerations. There are the effects on aircraft performance and the effects on aircraft stability and control.

Performance Effect

On many occasions, pilots have experienced a "floating tendency," of the aircraft when near the ground, which is especially noticeable during the "flareout," in landing. This is caused by the reduction of induced drags due to Ground Effect as explained above.

While "total drag," on an aircraft consists of both "induced drag," and "parasite drag," it is the induced drag that significantly is affected by Ground Effect. The parasite drag, or barn-door effect, which is produced by gear, flaps, dirty surfaces, and miscellaneous protuberances, need not be considered for the purpose of this discussion. However, in the low speed flight regions, as in takeoff and landing, the induced drag is by far the largest percentage of the total drag.

It then follows that a reduction of induced drag will result in a noticeable reduction in the total drag. Under this condition the thrust or power required to sustain the aircraft in flight is also reduced.

Lift To Drag Ratio

For example, let's assume that an aircraft with a wing span of 116 feet is flying at an altitude out of Ground Effect. With a complete loss of power, the pilot attempts to maintain altitude and the aircraft decelerates at 8 ft. per sec/sec or ¼ G. If the induced drag is 75 percent of the total drag for this reduced flight speed, it will account for 6 ft. per sec/sec of the deceleration. In this situation the aircraft has a lift to drag ratio of 4 to 1, or L over D of 4. Therefore, if the aircraft weighs 100,000 pounds then the total drag is 25,000 pounds.

This situation is depicted in figure 4.

This same aircraft, flying at the same airspeed and at the same gross weight, in the Ground Effect at an altitude of 10 feet in flareout for landing, would have a 50 percent reduction in induced drag. (Ref. fig. 3.) For this condition the breakdown of the total drag is as follows:

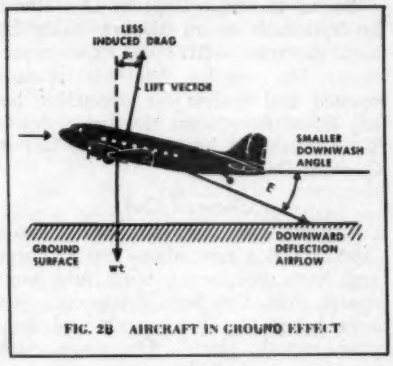


FIG. 2B AIRCRAFT IN GROUND EFFECT

	Pounds
PARASITE DRAG (same)	6,250
INDUCED DRAG (50% of 18,750 lbs.)	9,375
Total Drag	15,625

As the total drag dropped from 25,000 pounds to 15,625 pounds, the power off deceleration is now only 5/32 of a G. Therefore, it can be seen that in Ground Effect, the aircraft would be dissipating airspeed at 5 ft. per sec/sec, only 3/5 (more than half) the rate out of Ground Effect. Excess airspeed takes longer to dissipate in Ground Effect and the aircraft therefore has a tendency to float in the flareout.

Lifesaver

A multi-engine aircraft may experience a partial power failure (loss of 1 or 2 engines) so that flight at altitude cannot be maintained. However, due to the significant decrease in induced drag when in Ground Effect, this same aircraft may be able to sustain level flight when operating in close proximity to the ground or water. This situation has been experienced many times and is a matter of record.

This is an emergency procedure, and would be limited, over land, by terrain features. It is especially useful to know when engaged in transoceanic flights.

In many instances, aircraft, preparing to ditch, began to maintain airspeed and altitude in level flight when Ground Effect was entered close to the water. With power available from the remaining engines, they continued flight at this low altitude and after a period of time, sufficient fuel was consumed which reduced the gross weight. This permitted them to climb to higher and safer altitudes, and to safely reach destination.

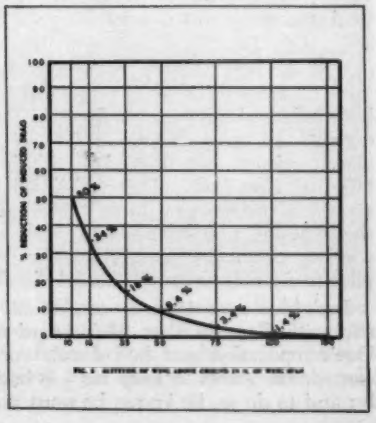
Killer

While entering Ground Effect as in landing reduces induced drag, which, in turn, reduces the thrust or power required for flight, leaving Ground Effect, as in takeoff has an opposite effect. In this case, the thrust or power required for flight can be increased over that required when in Ground Effect.

For example, an aircraft, which is heavily loaded, may become airborne because, due to the influence of Ground Effect, the power available is sufficient to sustain flight. However, once Ground Effect is left, due to the increase in induced drag, this power may not be enough to maintain flight. The aircraft may either stall out of control or "mush" down and back into the ground, resulting in an aircraft accident.

The importance of rigidly adhering to SOP's cannot be overemphasized. Using the recommended speed for take-

(Continued on Page 17)



Some Notes On

Crewmanship

From The
Flight Safety Foundation

Not long ago I visited the scene of a major air accident. The positions of the radio receivers and the heading on which the aircraft struck indicated that some confusion as to the proper approach procedures had contributed to the accident.

Since about half of my 10,000 hours has been spent as copilot and half as captain. I tried to visualize what went on in the cockpit just prior to the crash. My assumptions are based upon the hundred or so captains I have copiloted for and equal number of copilots I have had with me.

In the first place, it was definitely determined that the captain was flying the ship at the time of the accident. In most accidents I have been familiar with, the captain was at the controls at the time of the crash. In this case, the copilot either did not see the error or else he saw it and remained silent.

Not Incredible

Incredible, you say? A copilot saw an accident coming and didn't say anything? Let's create an imaginary accident and see if this is possible.

Captain Doe is a very fine pilot—one of the best. Among the other captains he rates the tops in respect to his knowledge, ability, and judgment. The copilots all agree to these fine pilot characteristics, but they also add that he's an "iron butt." Every airline has several of these "iron butts"; they are the captains who scream and shout at copilots, or maybe don't allow the copilot to do even the most menial chores.

Let's put a new, eager copilot on a trip with Captain Doe. He's heard of Doe's reputation and he's deeply concerned. He wants to keep his job badly; and to do so, he knows he must not aggravate Captain Doe.

So on the trip, Captain Doe shoots an approach at an airport, using his own shortcut — BUT SAFE — procedure. His copilot has his manual opened and notices the procedure being flown isn't what the book shows. Very cautiously he reports this fact to Captain Doe.

Chewed Out

"Listen, you," Captain Doe screams, "you're just a new idiot. You sit there and keep your eyes open and your mouth shut. I've been flying since you were born; you just watch and keep your mouth shut." Or some such strangely-worded phrase.

We all know 1 or 2 such characters; I even get a laugh out of their briskness. But to a copilot anxious to please, it isn't a bit funny. He promises himself to keep his mouth shut from now on. All copilots say they will speak up at the last minute to avoid an accident, but who can define the start of that last minute?

So several approaches later, Captain Doe makes a mistake. He shoots the procedure turn on the wrong side of the leg. A stupid mistake, you say. There must be a means of counteracting mistakes to avoid trouble.

The copilot sees the error of the incorrect turn, but he remembers the earlier incident and tells himself that Captain Doe is using some other unorthodox procedure. There is no warning time left; the last possible chance to rectify the error has been removed. The ship and all its passengers are lost.

Poor Crewmanship

The underlying cause of this accident is poor crewmanship. The fact the crew did not function as a crew, but as separate individuals, caused this accident.

Possible, but not probable, you say. In recent years some of the airlines may have inadvertently urged these very unhealthy conditions, building a wall between captain and copilot, so that the copilot rarely flew. Although I'm sure the company did not desire it, their copilots became mere "pushbuttons" for the captains.

Since World War II there has been a vast amount of experience in the right seat—often as much as or more than in the left. Some captains have treated copilots almost as equals. In prewar days, when captains had all the experience and copilots were still students, this was an unheard-of situation. Today the very low accident rate in face of very complex equipment shows that the World War II copilots are valuable assets in the right seat.

Use All Talents

In my opinion an airline crew should utilize to the maximum, all the available experience in the crew. True, there must be a chief, and this must be the captain. But when two possible courses of action are open for consideration, he should utilize all the talent he can for his decision. He is not relinquishing his authority by doing this, as it is he alone who makes the final decision.

Every copilot at the controls is under the direct and positive supervision of his captain. On the other hand, a captain's only active supervision comes once a year on a line check ride and twice a year under a 6-months' check. Any bad habits which a captain might have developed may be diguised on this periodic check. Thus we have a copilot, when he flies, having expert advice and guidance. The captain, on the other hand, is practically alone when he is flying. It is easy to see why the captain is generally flying at the time of the accident.

Must Be Team

The only possible way to correct this situation is for the captains themselves (not by regulation, which would destroy the harmony or crewmanship) to allow the copilot to question any act he does. Any copilot who abuses this privilege should be disciplined on the ground.

One other consideration on this subject of crewmanship which is extremely difficult to explore is that of the few dangerous captains. I believe these "accident prone" pilots are few and far indeed. The every few I've known are all dead and no longer a problem.

Along the Line . . .

Here and There With Air Line Pilots at Work and Play

Pilot Aids Scouts In Do-It-Yourself, Fly-It-Yourself Project

Interested in getting growing boys activated into the aviation field?

Then take a lesson from Capt. Malcolm J. Conway (TWA), of Ridgewood, N. J., who has his son and more than a score of other boys rebuilding an airplane as a Boy Scout project.

It is a direct approach to getting young men interested in aeronautical science, Conway believes, and he has no less than nine other pilots, engineers and even an atomic physicist, helping him teach the boys aviation via a "do it yourself," program.

Conway

The boys, of the Explorer Scout age, 14-17 years, are members of Air Squad 12, Bergen County, N. J., who organized several years ago but showed little interest in aviation until Conway and the other men took over and came up with an idea to let the boys have their own airplane.

The first step was acquiring a plane. William H. Scott, Flying Tiger, provided the equipment—a beaten up J-3 Piper which he had stored in a barn at his home in Glen Rock, N. J. —and the boys took it to the Somerville school for overhauling.

Starting on the fuselage, the Scouts are reworking the Piper from the ground up. This procedure, says Conway, not only gives the boys an interesting activity, it also teaches them airframe, controls, engine, and instruments from the start.

At the same time, the boys are attending ground school to learn the rudiments of meteorology, navigation, radio and civil air regulations.

"This project gave Scouting a shot in the arm in my home town area," says the genial Irishman. "It has proven to be a perfect father-son combination too, as my son and I have plenty of common interest now."

Conway also sees the project, believed to be the first of its kind in Scouting in the country, as an effective approach to interest young men in any field of aeronautics.

"We do not expect every boy to become a pilot or pursue a piloting career," he says. "But each one will have a solid basic knowledge of aviation that he can use in any field of aeronautics. From the high degree of interest they have exhibited, I am sure we are producing good prospects for the next generation of aviation."

Conway has a thoroughly serious attitude about the project and recommends that pilots in every section of the country take an active interest in a similar activity.

"We pilots and ALPA can be an important factor in guaranteeing the continued progress in the aeronautical field," he says.

The TWA captain is extremely modest about his role in the Piper rebuilding project. He lists Scott, Joe Gardner (UAL), who also has a boy in the troop; Jack Bruning (UAL), Charles McGinnis (TWA), and Jay Jennings (Meteor) as important help. Kenneth McAlpin, an atomic physicist, USAF officers, industrial engineers, and others are assisting in the project.

The boys plan to have the airplane completely overhauled by spring and start flying instructions. All will take physicals to determine their prospects of continuing flying training.

Conway, 39, is a native of Philadelphia and his interest in aviation dates back to his boyhood days when he made models and flew the noisy little machines despite the equally noisy objections of his neighbors.

"This project gives my boy and the other boys a chance to do the things I wanted to when I was young," he says. His son is deeply interested in aeronautical engineering.

Conway also is an expert on World War I airplanes and has a desire to rebuild a tri-wing Fokker.

A TWA pilot for 12 years, Conway flies the New York-St. Louis-Chicago run. He learned to fly in 1941 and was an instructor in the Royal Canadian Air Force during World War II.

Boy Scouts Overhaul Piper

The young men in Air Squad 12, Boy Scouts of America, Ridgewood-Glen Rock, N. J., are overhauling their own airplane on a project in which TWA Capt. Malcolm Conway is supervisor. From left to right in this picture are: Thomas Barnes, John Dorsey, instructors, and Scouts John Velanis and Robert Montagno.

NOR Honors Ceronsky

Capt. Robert J. Ceronsky, Minneapolis based, is the second pilot and the sixth North Central Airlines employee to celebrate 10 years with the company.

He joined the firm October 27, 1947, when North Central was operating an intrastate service as Wisconsin Central Airlines. During his career with NOR, Ceronsky has held the positions of chief pilot and operations manager. He returned to regular line flying in May, 1954.

A World War II AAF pilot, Ceronsky attained the rank of Captain and holds the Distinguished Flying Cross and the Air Medal. Before joining North Central he was a pilot with United Air Lines.

A native of Antigo, Wis., Ceronsky is married and has five children.

Speechmaking Pilots

Pilots of TWA have organized a public speaker's bureau along the lines similar to those operated by United and other air lines.

They appear at various functions where speakers are desirable. Of course, there is the one big subject—aviation—and the Airline Pilots' job to the general public.

A pilots' public relations committee is serving as a clearing house in organizing the speakers' program. They are Capts. George Hinton, Kansas City; Karl Ruppenthal, San Francisco, Dick Ruble, Los Angeles; Jack Quinn, Newark; Don Smith, Chicago; Eddie Boyce, Los Angeles, and Bill Runkle, Ypsilanti, Mich.

A Splashing Good Time

Champagne flows like—well, champagne, as Mrs. Gene Burns christens plane used on inaugural flight of the American Airlines' "Captain's Flagship," new luxury service on Detroit-New York run. With her are her husband, Capt. Lewis E. Burns, who piloted the inaugural flight, and Mrs. Ray Russom, wife of another American flight captain, who will also fly the special service. Both Burns and Russom are ALPA members.

TWA Pilots Test Salesmanship

Pilots of Trans World Airlines accompany TWA's sales representatives for the first time in Kansas City as an experiment. The pilots, Capt. Clifton C. Davis, left, and Capt. Paul Payne, right, explained technical questions for customers concerning flight and flight schedules. Both are ALPA members.

Calpa Aid's Ulrich Fund

The Canadian Air Line Pilots Association has contributed $1,770.75, to the Karl Ulrich fund, Capt. G. M. Sheridan (EAL), reports.

The amount was from voluntary contributions of members of CALPA and was send to Sheridan by J. H. Foy, president of the Canadian pilots association.

In forwarding the check, Foy said:

"It pleases me a great deal to enclose a cheque to you of $1,770.75, that we have collected for the Karl Ulrich Fund."

The Fund was established by Sheridan following Carl's death and from voluntary contributions has now reached approximately $6,000.

"The action of CALPA was a fine gesture from our professional brothers across the border and is greatly appreciated," Sheridan said.

Ulrich, 54, who died of a heart attach last April, was associated with ALPA for 14 years as a staff member and played an important role in the development of the Association.

He had many friends in the Canadian organization. In 1956, he assisted them in negotiating their first formula-type agreement.

Air Line Reports: "Radar Has Paid For Itself"

United Air Lines, which pioneered airborne radar for storm avoidance, has turned up facts and figures proving that radar saves dollars as well as increasing passenger comfort and safety.

Radar, UAL reports, has paid for itself by reducing aircraft damage, delays, detours and other problems of flight during thunderstorm periods.

This report is a result of more than four years' of experience with the use of the C-Band radar equipment which was evaluated and recommended by ALPA study groups when it first became available to commercial air lines.

Also at that time, Carl M. Christenson, director of safety of UAL, said the experiment in radar usage proved it reliable and it was a "must," for all modern flight equipment.

Now United has compared the months of April, 1955, before they installed $5 million in radar equipment, against the same months of 1956 and 1957, and came up with the following figures:

- Reduction in aircraft damage resulting from hail or thunderstorm turbulence. This problem had previously cost United an estimated $400,000 annually.
- Cases of static discharge were reduced 65%. Cost of this item had been about $25,000 a year.
- Turbulence incidents such as landings at off line points or detours at reduced cruising speeds decreased about 80%.
- Delays due to such turbulence incidents grew shorter. These detours and reduced-speed operations had cost about $150,000 a year.

Benefits Counted

According to the study, United's decision to buy the weather radar was based, in addition to safety and comfort factors, on an expectation of economic benefits. These have derived from the operating improvements mentioned plus increased passenger good will, schedule reliability, elimination of flight cancellations because of thunderstorm conditions, better flight crew morale and other intangibles.

The report points out that a full evaluation of the radar is impossible because of variables such as difference in thunderstorm frequencies and intensities from year to year. Nevertheless, United finds that "there is certainly some evidence of radar paying its own way economically."

Data for the study was obtained in part from more than 1,000 reports filed in by flight crews on special radar reporting forms. These include personal reaction information, and 90% of the reaction was favorable. Pilots reported such results as "would have turned back and landed" without radar, "would have detoured 300 miles south," and "flight through the area impossible without radar."

In its comparison of warm weather operations before and after radar, United noted 51 cases of static discharges in 1955. The next year, with its fleet 45% radar equipped, the cases dropped to 31. In 1957, with 95% radar, there were 18 cases.

Delays Reduced

Turbulence-caused flight delay of the airline's DC-6s amounted to an average of 276 min. per million miles flown in 1955, according to the study. This was down to 189 min. per million miles during the 1957 period.

The carrier's DC-7s averaged 101 min. of turbulence delay per million miles before any of them were radar-equipped. In 1957, with installation 65% complete, the average was 61 min. per million miles.

Flight crew response to the radar was 7% noncommittal, which the re-

Kitty Hawk Museum Site

Spotlighted in the center of the circle, the Wright Brothers National Memorial is seen in a panoramic view from the air at Kill Devil Hills near Kitty Hawk, N. C. The National Park Service has announced that a new museum, commemorating the first successful power-driven airplane flight by the Wright Brothers, December 17, 1903, will be built to the right of the monument. A new air strip also will be constructed at the site. The project is co-sponsored by the USAF, the Air Force Association, and the Kill Devil Hills Memorial Society.

First Home Office Meet For Trans Texas

Trans-Texas Airways MEC met in the Chicago ALPA home offices for the first time recently. Here the members are hearing an ALPA financial report from Treasurer D. J. Smith, standing. Around the table from left to right are: John Fontaine, A. J. High, Houston, Tex., chairman; Ted Allen, Pat Clear, and Kelley Steele.

port ascribes to lack of need for radar on a particular flight, or to impossibility of getting air route traffic control clearance along a desired detour path.

The report notes that unfavorable reactions, which totaled 3%, were usually connected with equipment malfunctions or inadequate understanding of the limitations of the devices. Mechanical reliability, however, is comparable to other equipment of similar complexity, according to the study.

Jet Noise Suppressor

Boeing's prototype 707 jet liner now has a completely new tailpipe design which includes a 21-tube sound suppressor compatible with a thrust reverser.

Flights, which were made in late September, were round trips from Seattle to Los Angeles and Seattle to Wichita, Kan.

Suppressors are also installed on number one production 707 scheduled to fly soon.

Boeing would not disclose the amount of the thrust and weight penalty imposed by the device.

Flights of the 707 prototype with the new suppressor followed intensive tests of nine different full-scale silencers installed on the plane at various times for a period of more than one year. Configurations of the nine full-scale suppressors were chosen on the basis of laboratory tests of more than 500 scale model silencers.

25 Attend TWA MEC Sessions

Trans World Airlines' MEC met at the ALPA home office in Chicago last month. Twenty-five attended with Capt. Dick Flournoy of New York City, chairman. Individual council problems were discussed during the three day sessions.

Muffles Noise

Tests with the 21-tube suppressor show that the device not only muffled jet exhaust noise but changed the character of the sound so that it is "no more noticeable to persons in the vicinity of airports than the sound produced by present-day airliners," says Boeing.

In service, the sound suppressors will be combined with thrust reversers and fitted as a unit to each engine.

Boeing's sound suppressor development began with the pioneering work of British scientists, notably Prof. M. J. Lighthill of the University af Manchester, F. B. Greaterex of Rolls-Royce Ltd., and Prof. E. J. Richards of the University of Southhampton.

Cost of developing the combination sound suppressor/thrust reverser has been several million dollars, including research, according to Boeing.

International Briefs

IFALPA

The annual conference of the International Federation of Air Line Pilots Association will be held in Bogota, Colombia, March 12-18.

◆ ◆ ◆

IATA Tech Meet

More than 500 technical experts took part in new jet and turbo prop aircraft exercises during the 10th Technical Conference of the International Air Transport Association in Miami Beach, Fla., in November.

The men represented IATA member airlines, manufacturers, air force and government agencies of the Americas, Europe, the Middle East, Africa, Australia, and the Far East, as well as other international organizations.

Taking the new jets and turboprops through every phase and circumstance of operation from flight planning to approach and landing, they exchanged data, debated methods and procedures, discussed new operating requirements for traffic control, communications, navigation, airport facilities, weather reporting, and pointed out areas in which further study and development should have priority attention.

Dangerous Runway

The Bureau of Safety of the CAA has been notified by ALPA of the dangerous condition of Runway No. 28, at Greater Pittsburgh Airport.

A request has been made for immediate attention to the elimination of the hazards. There have been seven accidents on this runway — three involving air carrier aircraft and the last being an NWA DC-6B on October 17.

After an investigation, Capt. R. H. Shotwell (NWA), ALPA accident representative, reported that for ILS approaches to the runway, the lighting system, surrounding terrain and other factors combine to cause pilots to approach too low and too short.

ALPA indicated that while a public hearing on the NWA accident was unnecessary, that an immediate project should be initiated to eliminate the conditions that have resulted in this series of accidents.

American MEC Meets In Chicago

The Master Executive Council of American Airlines and members of the AA negotiating committee pose in front of the ALPA home office in Chicago. Twenty-six members from throughout the system attended the 3-day sessions at which a detailed report on the status of new agreement negotiations was heard. Capt. C. E. Seal, Dallas, Tex., headed the MEC group, while Capt. J. R. Lyons of San Francisco, was chairman of the negotiating committee.

Space Flight Problems

Two major problem areas of human space flight are complete reliability of the propulsion system, heat and G forces created during re-entry, Brig. Gen. Don Flickinger, Director of Human Factors, ARDC, says.

Associated with the latter problem is development of an escape means for the human being in case of equipment, structural or other major failure during re-entry.

Gen. Flickinger stressed the fact that he was talking about a man orbiting the earth for a relatively short time, "6 hr. to 3-4 days," he said. He was not discussing shooting a man to the moon. "This involves still other even more complex problems," he said.

Other Problems

The well-publicized questions of weightlessness, effects of cosmic rays and meteor impact do not give as much concerns as the first two problems, according to Gen. Flickinger.

Reason is that effects of these conditions can be fairly well predicted. As he points out, the true problems of weightlessness, cosmic ray effects and meteor impact cannot be known until man orbits the earth.

However, he feels that the difference between predicted conditions and actual conditions as experienced by the first space man will not be unreasonably far apart.

Drunken Passengers Imperil Planes

From The Philadelphia Inquirer, *August 23, 1957*

It seems a bit thick to us to say that an air line pilot's judgment is to be trusted on virtually every issue —except whether drunken passengers on planes constitute a safety hazard.

Testifying in opposition to bills prohibiting serving of liquor aboard planes, Stuart G. Tipton, president of the Air Transport Association, declared: "If this legislation were actually justifiable on grounds of safety, there would be no possible argument against it."

Well, the Air Line Pilots Association, composed of men who operate the planes and who have the actual responsibility for safety in the air, has told a Senate committee that 23 airliners have been seriously endangered in flight by drunken passengers during the past two years.

The pilots' report shows:

Four instances of drunken passengers forcing their way into the cockpit; three instances of emergency landings to remove drunken passengers whose conduct was threatening the plane's safety; eight cases of tipsy passengers creating such a disturbance that flight crew members were forced to leave their jobs in the cockpit to handle the crises; three instances of drunken passengers damaging windows, doors or pressurizing devices in flight; five cases of drunken passengers creating fire hazards; three cases of drunken passengers carrying guns. . . .

These are actual experiences of pilots and crew members. And the fliers' union comments: "It would be a matter of extreme negligence to assume that it is not necessary to take preventive action until after a fatal accident."

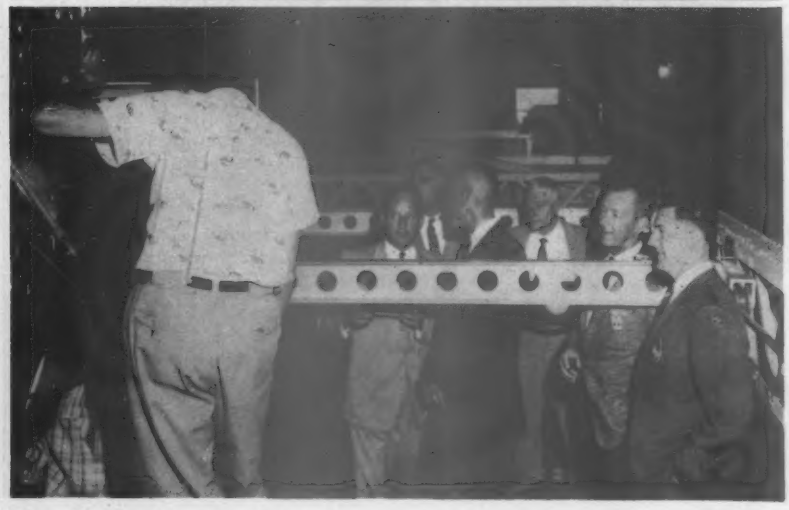
The argument is advanced that there is no recorded instance of a plane crash due to drunken passengers. But many crashes have been unexplained, with no survivors to tell whether the answer to any of them lay with the drunken conduct pilots complain about.

This is not a question of prohibition; it is a question of safety. It is not a question to be decided by polls, but by common sense and the light of experience.

The Air Line Pilots Association has cited chapter and verse concerning the perils of drunks aloft. We cannot believe these men are qualified to judge every safety factor about airplanes—except the danger of passenger drunkenness. We accept their word. Most thoughtful Americans will, too.

A Picture Story: ALPA Aircraft Evaluation

DC-8 Evaluation Party: standing, left to right—M. K. Oleson, DACo project engineer; Joseph Meek, ALPA, (DAL); T. C. Patecell, ALPA, (PAA); Theo. G. Linnert, ALPA engineering and air safety; Slim Larned, (UAL); Carlos Wood, DACo chief engineer, Long Beach division; W. T. Dickinson, DACo executive engineer, and Paul Foster, (EAL); kneeling, left to right—E. J. Becktold, ALPA, (EAL); Ed Watson, ALPA, (EAL); R. A. Stone, ALPA, (UAL); Carl Christianson, (UAL), and C. G. Sperry, ALPA, (UAL).



Expected To Fly In '58

As the new DC-8 Douglas jetliner moves into actual being, the ALPA evaluation committee keeps pace with construction by conferring recently with Douglas and air line representatives at the Long Beach plant.

The ALPA evaluation committee began working with plant and air line officials when design of the DC-8 was in the early stages. On their last visit to the plant, the group evaluated fail safe principles of the DC-8, metal fatigue cycling tests, and (lower pictures) saw construction work underway on wing sections and fuselage side sections.

As with other aircraft manufacturers, Douglas recognizes the importance of the "user," viewpoint in the design and construction of new transports and have welcomed conferences with the ALPA representatives in this field.

The ALPA evaluation committee now is looking forward to the Phase II program for the air liner which relates to flight handling characteristics and performance demonstrations.

The Douglas DC-8 is expected to fly early in 1958.

Notes On Ground Effect . . .

(Continued from Page 9)

off will preclude premature flight at a critical time (loss of engine on T. O.), thus nullifying the adverse influence of Ground Effect. This can prevent an aircraft accident.

A final consideration of Ground Effect is its influence on range. In Ground Effect, a maximum lift to drag (max L/D) ratio exists at a slower true airspeed. Therefore, with the loss of drag, less power is required for flight which results in increased range.

Extending range in this manner should be considered only as an emergency measure and is limited by terrain features.

While this procedure would be advantageous for conventional aircraft, it would be prohibitive for jets. This is due to the exorbitant rate of fuel consumption of jet engines at low altitudes which would have an adverse effect.

Stability And Control

By comparing the downward deflection airflows as shown in figure 2A and figures 2B, it can be seen that the downwash is closer to the tail surfaces in Ground Effect. As the Ground Effect is increased (flight closer to the ground) the downwash effect of the wing engulfs the tail surfaces thereby reducing the load on the tail. This results in a downward pitch at the nose of the aircraft.

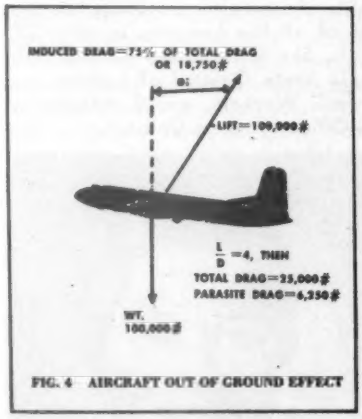


FIG. 4 AIRCRAFT OUT OF GROUND EFFECT

For example, if the tail is located 100 feet back of the CG and the down load is reduced by 1,000 pounds, then the downward pitching moment would be 100,000 pounds. As this is quite a load to overcome to prevent the aircraft from pitching into the ground, the pilots must exert positive upward elevator control to counteract it.

Aircraft designed with high tails experience very little downward pitch from Ground Effect as the tail is practically out of the effective downwash of the wing.

Things To Remember

The pilot should know the following influences of Ground Effect:

1. It can KILL YOU.
2. It can KEEP YOU ALIVE.
3. Accelerate in Ground Effect after T. O. due to reduction in drag.
4. Decelerate above Ground Effect in final approach due to greater drag.
5. Always use recommended speed for takeoff.
6. In Ground Effect, Max L/D is at slower TAS therefore aircraft floats.
7. There is a loss of drag and, therefore, increased range when in Ground Effect.
8. Ground Effect causes aircraft to pitch into ground and must be counteracted by upward elevator control.
9. There is a decrease in pull stick force as aircraft climbs out of Ground Effect.
10. There is an increase in pull stick force as aircraft enters Ground Effect.
11. Aircraft with larger wing span get more Ground Effect than aircraft with smaller wing span at the same altitude.

How Hot Are We? . . .

(Continued from Page 7)

week or two, which should dissipate any residual "fall out." It was further revealed that the only action he could take in regard to the matter was to effect a blood count for *future reference*. The theory behind it being: a subsequent breakdown of one's blood is proportional to the cumulative radiation assimilation.

Incidentally, my blood checked out as "low normal," which means more in terms of the medics than to me. However, if it is part of a trend downward, I don't like it. Now, at risk of gaining the reputation of an alarmist, I would like to present some cogent and thought provoking questions and opinions:

Are pilots who are flying over the Western and Central states being subjected to higher concentrations of radio activity than persons of a more mundane endeavor?

If so, how long will it take for a blood count to drop from "low normal," to "low low," and result directly or indirectly in a flunked physical examination?

How is all this going to affect (or prevent) our unborn children and grandchildren?

Are we not obligated to protect our passengers from man-made perils, such as this, the same as from a tornado?

No Answer

What can be done about the situation? It is very doubtful there exists a simple and concise answer. More conscientious dissemination of information by the Atomic Energy Commission would help. Some kind of detection equipment available at all major airline terminals might be of benefit. In order not to unduly alarm passengers, discretion, of course, would be necessary when checking aircraft and clothing for contamination. As an antidote there *must* be something more adequate than merely cleaning one's clothes—with utmost respect for the good doctor and his opinions.

There is one thing quite clear—our odds of fully enjoying the fruits of retirement are not very favorable at present, considering Ulcers, Atherosclerosis, Diabetes, Hemorrhoids, etc. Addition of a man-made malady does not increase those odds in our favor.

Oh yes—being an unprecedented case, the insurance company (group) is in a quandry deciding whether to pay for my blood test and consultation.

A Scab

This definition of a scab was presented in a court in London, England, by a prosecuting attorney:

"A scab is to his trade what a traitor is to his country, and though both may be useful in troublesome times they are detested by all when peace returns: so when help is needed the scab is the last to contribute assistance and the first to grasp the benefit he never labored to secure.

"He cares only for himself; he sees not beyond the extent of a day, and for a monetary appropriation he would betray friends, family and country. In short, he is a traitor on a small scale, who first sells his fellow worker and is afterwards sold in turn by his employer, until at last he is deposed by both and deserted by all. He is an enemy to himself, to the recent age, and to all posterity."

Dangerous Cargo . . .

(Continued from Page 6)

tional safeguards insofar as equipment and operating limits are concerned.

Cargo Pilot Risks

However, just the opposite is the case. T-Category exemptions, lower weather minimums and poorly designed aircraft for cargo functions are additional risks the cargo pilot is expected to assume. However, this discussion is probably academic for we have observed that for the most part cargo moves on the first available schedule which will accommodate it, whether the aircraft is a passenger plane or an airfreighter, and many cargo personnel are completely unaware that certain articles which may be transported on airfreighters may not be loaded on passenger planes.

It may be well at this point to speak for a few moments on the suitability of present-day aircraft for cargo operations. I do not think it particularly controversial to say that aircraft design and function for the transportation of cargo has not kept pace with passenger facilities. This, no doubt, is due to the emphasis which the airlines have always placed on the transportation of passengers, and until comparatively recently the carriage of cargo has been largely an adjunct to their primary source of revenue. Even today only a handful of certificated passenger airlines operate cargo aircraft as such.

Built In Hazards

Consequently certain hazards are built into present day aircraft insofar as the carriage of cargo is concerned which might well be eliminated by the design and construction of more suitable cargo aircraft and cargo facilities on passenger aircraft.

These include: difficulty of access to cargo compartments, and the installation of inverters, motors, and other potential fire hazards in cargo holds simply because nobody designed a better place to put this equipment.

They also include poor tie-down equipment or none at all, inadequate floor stress requirements, practically no jettison facilities, smoke and fire detection equipment of dubious merit, and a questionable adequacy of fire-fighting equipment.

The Committee has talked with many people employed by the airlines in various phases having to do with transportation of cargo and also has gone out into the field and examined cargo rooms and cargo handling equipment and facilities. We have observed the acceptance of cargo, actual airbills and manifests, and have observed the actual loading and unloading of cargo on aircraft.

Personnel Ignorance

It is not at all an exaggeration to state that profound ignorance exists not only on the part of personnel actually engaged in accepting and handling cargo, but in some cases even on the part of cargo supervisory personnel insofar as the tariff regulations, CAR 49, and company procedures are concerned.

So far as we can determine, little training of personnel has been conducted by most of the airlines to date, except the minimum required for processing, billing and getting cargo on and off aircraft at origination and destination points.

BEAUTY IS WHERE YOU FIND IT . . .

In Aviation . . .

Sold to Hawaiian without a doubt. Miss Margaret Moanikeala Brumaghim is described as a "sales representative," of Hawaiian Airlines and better words could not be found. Also she is one of the Island's top fashion models.

At ALPA . . .

An opportunity to serve and a desire to learn new skills put Miss Betty Conner into a Woman's Air Force Reserve uniform last September. WAF Pvt. Conner is the genial operator of the telephone switchboard and teletype at the home offices of ALPA. Her WAF assignment is secretary in a commanding general's section.

In The Unions . . .

"Miss Union Secretary," is the title of Mrs. Kathleen Kinnick of Berkeley, Calif., chosen after a nationwide contest of all the beauties in AFL-CIO locals. She is secretary for the California State Council of Lumber and Sawmill Workers, and a member of the Office Workers Union.

The Restricted Articles Tariff is not an easy one to read and not an easy one to understand. It is full of various technical and legal references designed only for the protection of the airlines in connection with their legal responsibility.

It is full of symbols and cross-references, data of a highly technical nature and in questioning airline agents who accept cargo and are responsible for seeing to it that the Tariff regulations are complied with, it is only the isolated individual who is conversant with the Tariff and understands its full applications.

Consequently, most of the obligation for seeing to it that potentially dangerous cargo is packed, labeled, identified and shipped falls on the shipper rather than the airlines personnel. It is true that the Tariff places the basic responsibility on the shipper rather than the carrier and perhaps for this reason the ignorance of the airlines personnel regarding dangerous cargo is so widespread.

Some Shippers Know

Fortunately, the traffic managers of the larger industrial concerns who ship dangerous cargo do have, so near as we can determine, a rather comprehensive knowledge of the shipping requirements of potentially dangerous cargo.

This is not due to any groundwork the airlines or the CAB has done, but rather to the educational and enforcement job which the Bureau of Explosives and the ICC have done. A very large number of airline cargo personnel have little idea of the packaging requirements of restricted articles, have little idea of what a white label, a red label, a yellow label, a green label mean, have little idea what labeled articles may not be loaded adjacent to other labeled articles, have little idea of the quantity limitations or the certifications required from shippers when restricted articles are carried.

We have looked in vain for evidence of any comprehensive training program set up by the airlines for their cargo personnel or adequate supervisory procedures to insure that the regulations are complied with in detail. Obviously no regulations, however adequate, will be effective unless the personnel handling cargo are familiar with the regulations and trained in the procedures necessary to comply with them.

Licensing Necessary?

It may be advisable to propose a licensing requirement on the part of the cargo supervisory personnel with periodic examinations by the CAA to retain the license, to insure that at least these personnel will be familiar with the regulations and be responsible through the medium of their license for the enforcement thereof with personnel under their jurisdiction.

We have been speaking here of training of personnel to understand and comply with the Civil Air Regulations insofar as the transportation of cargo is concerned.

Obviously if airline management itself is not fully conversant with the requirements of CAR 49, or is not sympathetic with the regulations imposed therein there is little likelihood that cargo personnel are going to receive the training they so badly need.

Most carriers, for instance, solid load their airfreighters; that is load cargo from the floor to the ceiling and to both sides with the result that the cargo in the cabin is not accessible to crew in case of fire and the crew has no access to any part of the interior of the aircraft except the cockpit and companionway ahead of the forward bulkhead.

Frank South LUGGAGE

ANNOUNCEMENT! We are proud to announce our new factory connection, one of the finest brief case manufacturers in the world, who now builds these bags to our strict specifications.

AND HERE'S OUR NEW BUILT-TO-ORDER BAG

The AIRLINER DESIGNED BY A PILOT TO MEET A PILOT'S NEEDS. With the new "stay-open" top, without a zipper.

Made of finest 6 oz. top-grain cowhide. Solid steel-frame construction around the top edge—NEW! Full length, saddle-stitched straps—full steel frame—solid brass lock. Solid binder-board reinforced ends and bottom will retain shape—2 full-length collapsible partitions—Quality built for extra years of service. Colors, Black, Tan and Ginger.

Size 16" x 7½" x 12½" outside dimensions. Retail price, $35.00. Low cost to you— **$21.95**

Size 18" x 8" x 13" outside dimensions Retail price, $37.50. Low cost to you— **$22.95**

No. 154 CLOSED

No. 154 OPEN

Double-thick corners—saddle stitched—Perfect workmanship—beautifully finished.

OUR NEW EXCLUSIVE "PILOT'S FAVORITE"

Made to our latest specifications—Stronger—better—handsomer—finest specimen of luggage-craftsmanship. This handsome new bag made of FINEST, select, 6 oz. top-grain cowhide.

No. 726

NOW built with solid steel frame on top flap for rigid anchoring of 2 solid brass locks.

NEW, non-sagging top with 3-ply veneered-wood reinforcement. Extra strength, yet light weight. These new features at no additional cost to you. Colors, Black, Tan and Ginger.

Size 16" x 7" x 11½" outside dimensions. Retail price, $29.95. Low cost to you— **$18.95**

Size 18" x 7½" x 13" outside dimensions. Retail price, $32.50. Low cost to you— **$19.95**

All prices plus F.E. tax of 10% plus $1.00 shipping charge.

We sell a full line of top-quality, business type brief cases and men's hanger bags. Your satisfaction absolutely guaranteed or your money back within ten days. No C.O.D.'s, please.

Write or phone for catalogue **Frank South** *Owned and operated by ALPA member*

P. O. Box 13366 Fort Worth 18, Texas Telephone, AT 4-8383

Practice Legal

A careful reading of CAR 49, raises serious doubts as to the legality of this practice although obviously it permits a greater amount of cargo to be loaded. Another example has to do with CAR 49, Section 52, "PILOT NOTIFICATION," which reads:

"When articles subject to the packing, marking, and labeling requirements of this part are carried on aircraft, the operator shall be responsible for notifying the pilot of the proper shipping name of the article as shown in the commodity list of Part 2, of the ICC Regulations, the type of label, quantity, and the location thereof.

"The pilot notification requirement may be met by entering the required information on the airplane load manifest."

So far as this Committee can determine—and we have made a very careful and full documented investigation in the field—not more than two carriers comply fully with this regulation.

Up to this point we have been talking of cargo which is shipped as such. Another aspect of the same problem concerns the hazards associated with the baggage carried aboard aircraft which is the property of the passengers.

The Tariff covering fares, rules and regulations in connection with the transportation of passengers and their baggage, (CAB 43), is published for the airlines by their agent, J. B. Walker, and outlines in detail regulations governing the transportation of passengers' baggage and details various items which may or may not be carried.

While our committee is not satisfied that the regulations are entirely adequate, under the present scheme of things it doesn't matter particularly whether they are or are not because only the isolated passenger would be familiar with the Tariff requirements.

The printed statement on the passenger's ticket that the ticket is issued subject to the requirements of the Tariff is, of course, only a legal provision and has no practical application in fact insofar as safety is concerned.

Law Not Safety

The passenger is referred to the Tariff which is on file at the ticket office but this tariff is so lengthy and involved that even many airline personnel don't know it as they should. A safety provision inserted in the passenger tariff may satisfy the lawyers but only the most naive will believe that act itself has the faintest relation to safety.

Probably everyone in this room has traveled extensively by air, and yet I would be very much surprised if even one of you has ever insisted upon reading the tariff when you purchased an airline ticket.

Consequently, unless the airlines provide the passenger with specific information when he purchases a ticket he has no practical way of knowing what his obligations are. Incident after incident has been reported where accidents could have been caused due to the articles carried in passengers' baggage.

Matches, lighter fluid, flammable solids and liquids carried for cosmetic purposes constitute hazards of which most passengers are not aware. Certain of the foreign airlines have taken steps to provide passengers with information regarding these items when they make reservations or purchase tickets.

Bad Publicity

The domestic airlines have, on a number of occasions, considered such a step but have always shied away from providing such specific information—presumably, I suppose, from a public relations standpoint on the assumption that it might frighten some passengers and would not be good for business.

Our Committee feels that just the opposite is the case and that the average air traveler would be happier to know that passengers are informed about the hazards associated with transporting dangerous articles in baggage. Unfortunately, complete control of cargo shipments by air does not rest in the hands of the CAB, the CAA and the airlines. While the CAB is empowered to make regulations governing the movement of cargo by air, personnel having no connection with the airlines or the CAB are responsible for the packaging, labeling and shipping of air cargo.

As previously indicated, the Committee has found a great deal of satisfaction in knowing that the transportation managers of the larger industrial concerns are familiar with the regulations and we believe for the most part are conscientious in adhering to them.

Probably the greatest reason for concern is the smaller or isolated shipper who would not have the Tariffs and would not appreciate the hazards involved or know the regualtions pertaining to air shipments.

ALPA MEMBERS

ROGER W. POBORSKY, M.D.

AND ALTERNATE

PHILIP FALK, M.D.

Civil Aviation Medical Examiners

wish to announce that they have been appointed by the

CIVIL AERONAUTICS ADMINISTRATION

as qualified to perform

1st CLASS EXAMINATIONS

as well as 2nd Class Examinations

OFFICES LOCATED AT
5548 WEST 65th STREET
CHICAGO 38, ILLINOIS

Two Blocks South of Midway Airport
Telephone POrtsmouth 7-6600

ALPA MEMBERS:

write for free catalog
special membership discount
nationwide shipments

GERRY MOBURG & CO.

furniture - carpeting - appliances

2539 w. peterson rd. UPtown 8-7350
CHICAGO, ILL.

Parcel Post Danger

This is especially true of shipments made by Air Parcel Post where individuals send various articles by air. We are all familiar with the normal procedure followed by the clerk in the Post Office when we send Parcel Post shipments. The clerk shakes the package, asks if it contains anything fragile, collects the postage and that is all there is to it.

The Post Office Department advises that their offices do have the regulations pertaining to the shipment of dangerous cargoes by air, but spot check at individual Post Offices indicate that personnel are not familiar with these regulations, nor do they inquire as to the specific nature of the article being shipped.

There is no question in the minds of the Committee that forbidden and restricted articles are shipped by Air Parcel Post due to the ignorance of the shipper and the Post Office clerks. Spot checks with the Air Express Division of the Railway Express Agency indicate that at least technically they are set up to insure that shipments accepted for Air Express comply with CAR 49, and the Restricted Articles Tariff.

The degree of enforcement, however, like that of the Post Office Department, is subject to question. Unquestionably the Air Express personnel are better informed than the Post Office personnel on the subject.

No Questions

Another matter that is somewhat disturbing is that the airlines cargo personnel do not see the airbills covering Air Express Shipments and do not question shipments originating with Air Express.

On Air Freight shipments originating with the carrier itself or presented by freight forwarders the airline office does receive the original airbills and has an additional measure of control over the various cargoes accepted.

In case of Air Express Shipments the airlines cargo personnel assume that Air Express will have taken steps to insure compliance and they do not question such shipments as to the commodity shipped, the weights, or the packaging and labeling of Air Express cargo.

In the case of Air Parcel Post the airlines do not even see the packages for they are inclosed in Post Office shipping bags.

Education Problem

What might be done in the nature of a widespread educational campaign so far as postal and air express personnel are concerned is problematical. The lines and the officials of Air Cargo Inc., acknowledge that a substantial hazard exists in this regard, but they are unable to come up with any practical plan for reducing the hazards involved, nor has our committee been more successful.

A great deal of thought will have to be given this question by the agencies involved to determine if there is some practical way to reduce the hazards from shipments originating from these sources.

Foreign Goods

In analyzing the Restricted Articles Tariff, the question immediately occurred to the Committee what regulations apply when restricted articles are flown to this country from abroad and transferred to domestic aircraft at port-of-entry for flight to final destination.

We have analyzed the Restricted Articles Tariff of the International Air Transport Association as approved by the foreign airlines who are members of this group. The regulations are not uniform, and in certain cases the classification, packaging and labeling of certain items which are acceptable by IATA do not meet the minimum standards of Agent Johnson's Tariff and the regulations of the CAB.

It is true that when such articles are shipped from abroad the shipper has the obligation to conform not only with IATA's regulations but also with the Restricted Articles Tariff of the domestic airlines, but from a practical standpoint this is not the answer.

If the article is acceptable by IATA regulations the foreign carriér will accept it and transport it to this country. So far as we can learn no special checks are made on such restricted articles when they are delivered by a foreign carrier to a domestic airline to insure that they comply with the domestic restricted articles tariff.

ELK HUNTING
Famous Wind River Area, Wyoming
Season: Sept. 10 to Oct. 31
97% HUNTER SUCCESS IN 1957
Licenses, Permits, Reservations must be obtained now! All Permits issued by April 1st last year.
Reference . . . Capt. Bill Ice . . .
Flying Tigers
Best of Guides and Equipment
SUMMER FISHING . . . PACK TRIP OR FROM THE RANCH. AAA Accommodations for family. Write, Wire or Phone.
Bob Tripp
Red Rock Ranch Outfitters
Dubois, Wyoming
Tel. 6F4

pilots employment agency
Teterboro Airport
Teterboro 5, New Jersey

ALPA Members

Save on furniture, carpet, drapes.

Buy at actual cost plus small fee.

Advise me, if possible, of factory name and piece number.

George H. Burch
Moore Furniture Bldg.
191 N.E. 40th St.
Miami, Fla.

ESTATE PLANNING
Life Insurance at a Discount!

For the Pilot who wants enough PERMANENT Life Insurance on a money-saving discount basis, to complete his estate program IN ITS ENTIRETY.

In addition, 3.4% tax free interest is now paid by the Massachusetts Mutual Life Insurance Company on accumulations left on deposit.

Your inquiry is solicited without obligation.

SCHIPPLOCK SALVESEN

ESTATE PLANNING & GENERAL INSURANCE
CHICAGO MIDWAY AIRPORT
POrtsmouth 7-6838 4848 W. 63rd St., Chicago 38, Ill.

OWN A LAUNDROMAT

COIN-OPERATED LAUNDRY STORE!

Manage in a few hours a week!

The coin-operated, completely unattended **Westinghouse** Laundromat® equipped laundry store provides a proved way to increase your income $4000 to $8000 a year. It requires only a few hours of management time a week.

Briefly, here's what it is:

1. A coin-operated laundry store requires no attendants... all equipment is coin-metered and operated by customers as easily as soft drink vending machines.
2. A coin-operated laundry store is often open 24 hours a day, 7 days a week. Profits are realized during night and weekend hours when other laundries are closed.

Here's why they're successful:

1. Being open day and night... and all weekend long, these stores provide a necessary modern convenience for bachelors, career girls, students and working families who can only do laundry during hours when regular laundry stores are closed.
2. Coin-operated laundry stores enable the housewife to save almost 50% on her weekly laundry bill. She can do her laundry chores faster, cheaper, and better than she can at home or by using other laundry services.

Here's what it does for you:

1. Because it takes so little of your time, it does not interfere with your regular business or job.
2. Depreciation of equipment for tax purposes is rapid and within a relatively short period, you own a going depression-proof business that actually runs itself.

We offer advice, store planning, training and advertising. We will finance up to 80% of the necessary equipment. In the last 10 years, we have helped establish over 6,000 laundry stores... have assisted over 6,000 men and women to own their own profitable business in their own communities.

YOU CAN BE SURE... IF IT'S Westinghouse

CALL, WIRE OR WRITE

ALD, Inc.

3549 N. Clark St., Chicago 13, Ill.
13757 Wyoming, Detroit 38, Mich.
5534 National Turnpike Road, Louisville, Ky.
8202 Chancellor Row, Dallas, Texas
7402 Sunset Blvd., Los Angeles 46, Calif.
69—37th Ave., San Mateo, Calif.
The Prudential Bldg., Room 1704, Jacksonville 7, Fla.
ALD New York, Inc., 511 W. Coldspring Lane, Baltimore 10, Md
ALD New York, Inc., 10-32 47th Road, Long Island City 1, N.Y.

IATA Tougher

Fortunately an analysis of the IATA tariff indicates that, for the most part, it is even more restrictive than the domestic tariff, so that in most instances where such shipments comply with the IATA tariff they will also comply with the domestic tariff.

However, the Committee does not believe we can be complacent about this matter and that a greater degree of responsibility should be placed on the domestic airlines to insure that any shipments received from foreign carriers actually do comply with the domestic tariff.

It is useless to state that this is the shipper's legal responsibility because the shipper is a foreign national and not subject to the punitive regulations which apply to domestic shippers. Obviously a uniform IATA and domestic tariff is very much to be desired and we know the airlines are working toward that goal.

Ultrasonic Vibration

The question has been posed from a number of sources as to just what effect the emission of ultrasonic vibrations from jet aircraft might have on the chemical composition of various substances, thus creating a hazard where otherwise no hazard might exist.

Since the military has been studying this and related problems for sometime we called upon their knowledge for assistance in this regard. In this connection we received the following reassurance from Dr. Horace O. Parrack, Technical Director & Coordinator, Air Force Noise and Vibration Control, Air Research and Development Command:

"It is improbable that the energy level of ultrasonic frequencies inside the aircraft will be high enough to bring about changes in the chemical composition of substances carried as cargo. If such materials are in containers of wood, metal or even heavy paper, they will be further protected. At present, this office cannot visualize a problem created by ultrasound from jet engines like the one suggested."

Decompression

As to the effects on cargo of emergency decompression this is a matter about which we have considerable misgivings. It is universal knowledge, of course, that any gas or air-charged container when taken aloft will have a greater pressure on the inside of the container due to the decreased forces on the outside as a result of decreased air pressure aloft.

In discussing the matter with the Bureau of Explosives, the director indicated that differential pressure is not considered in the establishment of minimum container requirements carrying compressed gases due to altitude changes. The reason, of course, is obvious—railway cars, trucks and ships do not leave the earth and the difference in terrain altitude above sea level is not great enough to justify serious concern.

We have had any number of incidents where hazards have resulted due to various materials being forced from their containers due to expanded internal pressure even at flight altitudes as low as 6000 feet.

The possibilities associated with explosions in connection with an emergency decompression at 30,000 or 35,000 feet can readily be visualized. It may well be that the regulations will need a complete overhaul insofar as the requirements are concerned in connection with the carriage of compressed gases, and the outage, container and lid requirements for the transportation of liquids. This surely is a problem on which the CAB and the airlines should fully satisfy themselves before the advent of the high-altitude jet transports in commercial service.

Need More Study

There are other areas associated with the transportation of cargo by air which pose safety problems which time will not permit me to discuss. The deeper our Committee got into our investigations, the more areas we encountered which required study.

We intend to pursue our investigations to the maximum of our facilities and ability. Obviously, the matter of cargo safety, like every other aspect of safety in air transportation, requires constant study and continuous monitoring. The airline pilots are prepared to accept our share of this responsibility.

You TOO Can Be Among These Advertisers!

Address Your Message To An Above-Average Income Market!

A 2" Space Will Cost You Only $29.00

With Ample Discounts For Multiple Insertions.

Other Rates And Information Upon Request From The Air Line Pilot, 55th and Cicero Ave., Chicago 38, Ill.

In Constant Memoriam

"TO FLY WEST, MY FRIEND, IS A FLIGHT
WE ALL MUST TAKE FOR A FINAL CHECK"

Active Military Service—

Allen, K. N.—AA
Anderline, F. W.—UAL
Bankson, Paul H.—TWA
Bayliss A. W.—DAL
Beadles, E. C.—UAL
Berger, H. A.—UAL
Bewley, G. C.—NWA
Bonham, Carlos W.—HAL
Bowen, W. S.—EAL
Campbell, Milo—TWA
Carmichael, G. F.—TWA
Caton, C. E.—EAL
Cherry, Redford A.—UAL
Connelly, L. J.—TWA
Darby, J. E.—C&S
Davis, W. E.—Continental
Diltz, H. C.—TWA
Doxey, W. S.—PAA
Duke, A. B.—EAL
Durlin, R. C.—UAL
Eyre, Lloyd—UAL
Fisher, Wm. A.—Colonial
Folkers, H. J.—Braniff
Gladstone, John T.—UAL
Gray, W. B.—EAL
Greenlee, R. L.—UAL
Hazlett, G. W.—BNF
Herndon, Thomas—UAL
Howell, P. P.—TWA
Hurren, Aubrey S.—WAL
Jackson, Walter—TWA
Jones, J. P.—EAL
Keith, W. E.—AA
Kimball, W. F.—TWA
Knudsen, Max—TWA
Lafferty, Robt.—C&S
Lerette, Albert J., Jr.—FAL
McDowell, H. C.—UAL
Mills, Arthur—Braniff
Mitchell, H. F.—Colonial
Mostoller, Charles—EAL
Murphy, Leigh—UAL
Nagel, John—MCA
Nelson, F. S.—WAL
Nelson, R. G.—NEA
Nuckols, S. S.—AA
O'Donnell, Wm. J.—UAL
Parker, Alton N.—TWA
Pielemeir, H. E.—AA
Peterson, Warren—TWA
Quale, R. J.—AA
Rehm, W. L.—NEA
Roscoe, T. M.—TWA
Roth, P. F.—EAL
Schier, Tip—Delta
Schoensee, Wm. D.—Central
Shafer, G. H.—TWA
Skelly, H. J.—AA
Sparboe, J. H.—NWA
Taylor, Charles M.—BAL
Thompson, J. J.—TWA
Treweek, J. M.—AA
Walsh, Raymond—AOA
Webster, B. F.—NCA
Williams, R. W.—EAL
Wolfe, J. E., Jr.—NAL
Wolfendale, Chas. W.—PAA
Zimmerman, H. J.—TWA

Active—Accidental

Adams, J. B.—UAL
Alcock, G. A.—PAA
Armstrong, R. P.—TWA
Amthor, W. E.—TWA
Alexander, Robt. S.—PAA
Anderson, Lloyd—UAL
Andert, P. A.—UAL
Antonio, S. B.—PCA
Appleby, J. R.—UAL
Aronson, Oliver G.—AA
Bamberger, T. L.—TWA
Banegas, Antonio—TACA
Barrett, J. C., Jr.—PAA
Barron, H. C.—AA
Barron, J. M., Jr.—AA
Bass, Leon M.—ELS
Bass, Wm. E.—D-C&S
Bates, C. F.—NWA
Baxter, Paul B.—PAA
Bethel, A. T.—TWA
Bettle, D. O.—EAL
Bickford, L. A.—PNG
Bigelow, Edward—UAL
Bliven, L. H.—NWA
Blom, E. W.—UAL
Bogen, W. L.—WAE
Boggs, Wm. B.—D-C&S
Bohnet, F. L.—TWA
Bolton, H. F.—TWA
Bontrager, C. M.—UAL
Borchers, Adrian—PAA
Bowen, J. E.—TWA
Bowen, L. L.—BNF
Brand, W. J.—AA
Brandon, J. L.—UAL
Brenner, D. F.—NWA
Briggs, F. W.—AA
Briggs, W. P.—UAL
Brigman, R. M.—AA
Broughton, D. E.—UAL
Brown, D. W.—UAL
Brown, F. L.—UAL
Brown, G. H.—PAA
Brown, H. B.—NEA
Brunk, P. S.—PAA
Bryan, T. E.—AAA
Bucher, C. L.—CA
Bucklin, Fred—NEA
Bullis, R. L.—PAA
Burke, Carl R.—CAP
Burks, J. A.—UAL
Burton, R. L.—Inland
Caneta, J. J.—EAL
Carmichael, J. G.—CAP
Carpenter, B. A.—AA
Carson, S. A.—PCA
Carter, Harold L.—Robinson
Cavanagh, Charles—NEA
Cawley, Milton R.—WAL
Chamberlain, C. B.—NWA
Charleton, H. T.—AA
Childress, R. K.—TWA
Christensen, E. L.—TWA
Christian, B. W.—NWA
Christian, F. J., Jr.—NWA
Clark, F. M.—Continental
Clark, R. E.—WAL
Clayton, R. C.—C&S
Cohn, H. G.—WAS
Cole, D. C.—UAL
Coney, W. E.—EAL
Cooke, Clinton C.—UAL
Cooper, D. I.—AA
Cope, A.—Marine Airways
Cox, Floyd—Ludington
Crawford, F. J.—PAA
Creason, J. J. Jr.—TWA
Creekmore, R. N.—PCA
Crew, Carl D.—LAA
Crockett, Wm. B., Jr.—U.S.
Crowther, Robert E.—WAL
Currie, L. F.—ASA
Dace, F. E.—WAL
Daily, B. H.—TWA
Davidson, W. A.—AA
Davis, A. W.—UAL
Davis, Douglas—EAL
Davis, Leland D.—NWA
Davis, W. J.—CAP
De Blauw, John, Jr.—LAA
DeCesare, Frank—PNG
DeCesaro, J. G.—UAL
Dietz, S. G.—EAL
Dietze, R. H.—AA
Disoway, J. S.—Delta
Dixon, Andrew, Jr.—Delta
Dowd, J. H.—Pioneer
Dozier, H. M.—UAL
Dryer, D. F.—AA
Dyjak, R. J.—NWA
Edwards, Lyle O.—ASA
Eitner, R. G.—AA
Elder, McLemore—AA
Elzsey, R. M.—PAA
Fey, Howard—UAL
Fidroeff, W. M.—WAL
Fields, G. T.—AA
Fife, M. L.—AA
Fischer, J. F.—NWA
Fletcher, David B.—TWA
Fortenberry, W. H.—PAA
Fortner, W. F.—EAL
Foster, L. A.—PAA
Foster, W. G.—NAL
Francis, D. B.—AA
Fuller, R. E.—AA
Funkhouser, R. W.—TWA
Gahan, Myles—AA
Galt, J. R.—NWA
Gander, E. J.—NWA
Gandy, J. S.—TWA
Gardner, G. W.—PNG
Gates, Wm. G.—AA
Gay, R. A.—AA
Gentry, J. N.—PAA
George, Hal—TWA
Giberson, S. H.—BNF
Gill, D. N.—TWA
Gillette, M. A.—TWA
Gin, Warren N.—FTL
Glendon, R. J.—RAL
Golden, Glenn—AA
Gorian, Martin G.—NWA
Gower, V. I.—Delta
Graham, J. H.—MCA
Greber, Charles E.—FTL
Griesbach, G. G.—UAL
Grossarth, Albert—PAA
Grover, R. B.—UAL
Haid, A. A.—NWA
Hale, S. H.—EAL
Hall, L. H.—UAL
Hallgren, W. A.—AA
Ham, F. M., Jr.—AA
Hammitt, Haldon J.—TWA
Hammond, Robert G.—BNF
Harker, R. K.—Trans-Texas
Harms, R. W.—UAL
Hart, J. F.—NWA
Hart, J. H.—PAA
Hartunian, Leon—CAP
Haskew, H. M.—EAL
Hawkins, Wm. M.—PAA
Havlena, G.—PAA
Hazelwood, C. R.—EAL
Hedden, Marion W.—UAL
Hendrick, A. G. Jr.—PAA
Henson, C. M.—PAA
Hill, G. W.—AA
Hobby, David P.—AAA
Hohag, R. J.—NWA
Holbrook, C. M.—AA
Holloway, G. L.—Delta
Holsenbeck, W. M.—PAA
Holstrom, A. E.—AAA
Houed, Victor—TACA
Huff, J. A.—NWA
Hunt, Edward—AA
Ice, J. R.—Inland
Inman, R. R.—TWA
Inman, W. B.—EAL
Ireland, B. L.—Continental
Jacobson, Robert C.—WAL
Jakle, F. C.—PAA
Jameiler, S. E.—CAL
Jamieson, W. L.—EAL
Jewett, George A.—UAL
Johnson, D. M.—PAA
Johnson, R. L.—NWA
Jones, D. B.—NWA
Jones, H. H.—PCA
Jones, L. E.—UAL
Jones, W. H.—UAL
Josselyn, John—PCA
Judd, O. K.—PAA
Kaufman, R. A.—AA
Kelsey, H. J.—AA
Kelley, R. A., Jr.—FAL
Kennedy, V. G.—TWA
Kincannon, T. N.—AA
King, D. J.—NWA
King, G. B.—PAA
King, J. O.—EAL
Knight, R. S.—EAL
Kocher, J. D.—UAL
Komdat, A. C.—EAL
Kroeger, J. H.—PAA
Kuhn, K. H.—NWA
Kuser, R. E.—EAL
Lamb, C. S.—UAL
LaMontagne, R. L.—AA
Lampman, L. G.—NWA
Lehr, R. B.—AOA
Lewis, H. C.—TWA
Lind, Robert C.—NWA
Livermore, Joe—NWA
Llewellyn, F. A.—Robinson
Loeffler, E. J.—WAL
Lohr, G. A.—RAL
Lucas, Hal—Wyoming Air
Lucas, Verne—Ludington
Lunn, Wm. M.—PAA
Lynn, J. B.—C&S
Majors, R. R.—AA
Mallick, F. E.—UAL
Mamer, N. B.—NWA
Marshall, G. V.—AA
Martin, K. R.—NWA
Matthews, Leroy R.—EAL
McAfee, Wm.—PAA
McBrien, T. F.—EAL
McCauley, J. R.—AA
McClemens, K. J.—NEA
McCoy, R. S.—PAA
McCracken, H. Wayne—AA
McGinn, W. T.—NWA
McKiernan, P. S.—TWA
McLaughlin, J. J.—AA
McMickle, Harold—PNG
McMillen, E. L.—UAL
McVey, W. F.—AA
Merrifield, A. S.—UAL
Miller, B. D.—AA
Miller, G. D.—NWA
Miller, G. J.—WAL
Miner, W. H.—UAL
Mitchell, J. W.—EAL
Monckton, R. F.—TWA
Monsen, A. N.—PAA
Montee, Ralph—TWA
Montijo, J. G.—VAT
Morgan, H. R.—TWA
Morgan, H. W.—PAA
Mossman, R. C.—C&S
Nash, George J.—ASA
Neff, Harold—UAL
Nilsen, N. A.—TWA
Noe, E. J.—TWA
Norby, R. B.—NWA
Nordbeck, H. J.—NEA
Noyes, D. L.—AA
Obri, N. F.—PAA
O'Brien, W. E.—PCA
O'Connor, John—TWA
O'Connor, Robt.—CAP
Odell, N. T.—AA
Olson. K. S.—NWA
Onsgard, Alden—NWA
Owens, C. P.—WAE
Palau, E. M.—TACA
Paschal, Archie—PAA
Paulis, Raymond—PCA
Peck, R. Z.—NAL
Pedley, C. F.—AA
Penn, Lewis A.—PAA
Perry, J. A.—EAL
Person, A. G.—PAA
Petry, R.—NWA
Pfaffinger, John J.—NWA
Phillips, W. M. S.—EAL
Pickering, Wm. A.—BNF
Pickup, C. V.—UAL
Pitman, C. V.—Avianca
Pitts, Vincent L.—NEA
Podgurski, H. A.—CAP
Poe, K. N.—Avianca
Pope, Francis—TWA
Porter, G. H.—AAA
Porter, L. L.—CAP
Potter, N. W.—UAL
Powell, John T.—PAA
Proebstle, Roy—NWA
Pursley, C. H.—PNG
Quinn, J. W.—TWA
Radoll, R. W.—UAL
Raley, R. J.—NWA
Ray, George—EAL
Read, E. J.—UAL
Reid, Thomas J.—AA
Render, R. F.—NWA
Repack, W. T.—PCA
Rhew, J. N.—C&S
Rickman, L. M.—NWA
Riggs, R. S.—AA
Rinyu, J. J.—EAL
Ritner, J.H.—TWA
Robbins, W. J. B.—AA
Rogers, Wesley H.—AA
Rossow, S. R.—UAL
Rousch, C. W.—NWA
Ryan, C. W.—NWA
St. Clair, Carney E.—NAL
Salisbury, H. M.—TWA
Salisbury, R. D.—UAL
Saltanis, P. J.—EAL
Sanborn, R. B.—EAL
Sandblom, J. V.—CP
Sandgren, T. E.—UAL
Sands, R. E.—UAL
Sauceda, J. M.—PAA
Schanken, W. J.—AA
Schember, R. C.—UAL
Schwartzbach, M. D.—WAL
Scott, P. C.—UAL
Scott, P. T. W.—TWA
Scroggins, L. V.—PCA
Sederberg, R. S.—RID
Shank, E. S.—NWA
Sharpnack, J. W.—UAL
Sheets, D. K.—PNG
Shelton, G. E.—TWA
Sherwood, G. C.—WAL
Shirley, R. F.—UAL
Simmons, Julien B.—EAL
Smith, G. E.—TWA
Smoot, C. H.—BNF
Snowden, J. P.—TWA
Spong, I. R.—TWA
Sprado, George—WAL
Springer, Ernest—NAL
Stark, Horace—PCA
Stehle, W. C.—AA
Stein, John F.—CAP
Stentz, J. W.—AA
Stewart, J. P., Jr.—D-C&S
Stickel, J. J.—NWA
Stiller, H. A.—AA
Stoner, S. E.—AA
Stroud, J. E.—AA
Stultz, H. L.—TWA
Sumrall, N. B.—PAA
Supple, R. E.—PNG
Swallow, E. K.—UAL
Swander, L. D.—NAL
Sweetland, R. W.—NEA
Tarrant, H. R.—UAL
Taylor, V. W.—NWA
Terletzky, Leo—PAA
Thomas, L. E.—EAL
Thomas, Robt. E.—CAP
Thompson, A. R.—UAL
Thompson, N. W.—NWA
Tobin, A. R.—BNF
Toler, P. K.—MCA
Tower, H. G.—UAL
Turbyne, Robert—PNG
Underwood, S. L.—AA
Vance, C. K.—UAL
VanCleef, J. G.—NWA
Vanderbusch, R. E.—NWA
Venderley, P. W.—AA
Volk, Douglas P.—D-C&S
Wacha, Floyd F.—ASA
Wagar, G. K.—UAL
Waldron, Joe—AA
Walker, M. A.—PAA
Wallace, C. W.—TWA
Wallace, E. G.—PAA
Warner, George—UAL
Wasil, N. A.—TWA
Watkins, E. C.—AA
Weatherdon, Edwin—AA
Webb, Vernie—UAL
Webb, Walton B.—TWA
Weber, R. J.—WAL
Weeks, R. E.—TWA
West, F. W.—NWA
Westerfield, W. R.—AOA
Whidden, R. G.—NEA
White, D. A.—UAL
Wieselmayer, Otto—PAA
Wilde, Wm. B.—BNF
Williams, B. R.—Ozark
Williams, H. W.—BNF
Williams, W. C.—TWA
Williamson, P. B.—EAL
Willingham, K. V.—EAL
Wilson, W. C.—AA
Winkler, F. X.—TWA
Witt, Porter—NWA
Woederhoff, Jack L.—US
Wolf, J. F.—WAE
Wolfe, Verne F.—NWA
Worthen, J. A.—WW
Wright, J. S.—TWA
Wygant, M. D.—PAA
Young, G. E.—UAL
Zeh, Robert W., Jr.—EAL
Zeier, C. F.—C&S
Zundel, W. R.—AA

Active—Natural

Alldredge, Ezra—NWA
Allen, Wm. C.—AA
Andrews, Clyde M.—NAL
Bedell, Chas. W.—PAA
Biggerstaff, J. F.—AAL
Blanchard, J. R.—TOA
Blomgren, L. L.—AA
Boswell, Robt. S.—EAL
Bower, Ralph S.—MOH
Boyer, C. M., Jr.—PAA
Briggs, Edwin—CAP
Brundage, James—PAA
Brown, Leland C.—UAL
Caperton, Arthur L.—AA
Carl, A. C.—PCA
Cherry, R. A., Jr.—UAL
Chiappino, L. J.—TWA
Christman, Ronald—NWA
Cochran, R. M.—UAL
Colton, Ray—UAL
Couch, L. H., Jr.—PAA
Crosson, Joseph—PAA
Currier, C. L.—TWA
Dunn, G. B.—NWA
Durrance, J. C.—EAL
Dwyer, R. H.—NEA
Edwards, Walter—NWA
Engeset, E. C.—WCA
Ensberg, C. E.—WAL
Eubanks, C. H.—TWA
Fife, J. A.—CA
Flinn, Elroy J.—PAA
Fleming, Harry B.—PAA
Fogleman, A. V.—CAP
Freng, Ragnar—UAL
Gabler, G. W.—CAP
Gambee, H. T.—TWA
Garman, Harry J.—AA
Gaunt, Nelson—EAL
Glerum, Marinus—AA
Gorman, E. T.—EAL
Griffin, L. B.—PNG
Hale, Horton—TWA
Hamilton, James T.—PNG
Harris, D. T.—AA
Hayden, John—UAL
Hedenquist, W. A.—TWA
Helm, Rudolph—NWA
Hiser, H. E.—CAP
Holladay, Howard—EAL
Hubbard, D. L.—NWA
Hudson, L. P.—AAL
Jamieson, L. S.—EAL
Jaster, F. B.—EAL
Jenkins, J. G.—AA
Johannpeter, J. W.—AA
Johnson, H. A.—TWA
Johnson, P. E.—UAL
Jones, Ray S.—AA
Keadle, F. E.—Varney
Kite, Don N.—AA
Klein, Gordon T.—CAL
Lee, Thomas J.—AA
Leist, G. D.—PCA
Lohmar, Alfred H.—NWA
MacKay, E. S.—EAL
Magli, W. C.—AA
Maguire, R. C.—AA
Mesker, D. J.—TWA
Metcalfe, Chas.—WAL
McConaughey, I. M.—AA
McMasters, T. G.—CAP
Mundello, D. B.—PAA
Nehring, F. W., Jr.—PAA
Neilson, D. A.—NWA
Neumann, Wallace I.—BNF
O'Rourke, J. H.—AAL
Peterson, J. M.—NWA
Phelps, H. T.—PAA
Pippinger, D. W.—PAA
Plew, W. R.—Nor.
Pricer, J. S.—AA
Reynolds, Philip C.—AA
Rhoades, G. I.—PAA
Schuchman, E. H.—AAL
Shepard, E. W.—PAA
Singleton, J. L.—Southern
Spires, Scott—BNF
Steup, W. A.—CAP
Strait, Robert—TWA
Sutton, L. L.—PAI
Swanson, Axel—AA
Tuntland, P. E.—WAL
Vergie, F. W.—UAL
Vine, Warren—AA
Wagner, M. J.—PCA
Waldner, Claude F.—EAL
Wallace, J. L.—UAL
Weston, Paul—PAA
Whitman, M. M.—D-C&S
Williams, Lee—PAA
Winston, W. A.—PAA
Wittenberg, F. E.—UAL
Wyatt, R. L.—EAL
Wynne, H. F.—WAL

ALPA Employees

Behncke, D. L.—UAL
Camden, Sterling—EAL
Munch, F. O.—Hqrs.
Ulrich, K. J.—Hqrs.

Now Non-Cancellable To Age 60

(Except for Non-Payment premium, of course)

$25,000.00

(CASH, TAX FREE)

Airline Pilot Occupational Disability Insurance*

The coverage is designed to pay an airline pilot $25,000. cash, tax free, if he is permanently prevented from flying for his airline for physical reasons.

This group has been operating longer than any other plan of its kind in North America and NO CLAIM HAS EVER BEEN DENIED.

This coverage can only be provided on a group basis. If you are interested in obtaining it for your airline, ask your L.E.C. or M.E.C. chairman to contact us.

Notice To Airlines Already Insured

If your airline is already covered by this plan you will become eligible as follows:

a. Co-pilots become eligible after 12 months service and may join without a physical examination anytime up to 26 months service.

b. Any Captain or Co-pilot with more than 26 months service may join by taking a physical examination. (To be taken in connection with a CAA Class I or an airline company physical.) The examination cost of $25.00 is paid by the pilot. Please contact us for the medical form before taking the physical.

Airlines Covered

- Bonanza Air Lines
- Canadian Pacific Airlines
- Capital Airlines
- Delta Air Lines
- Eastern Air Lines
- Frontier Airlines
- Northeast Airlines
- Southern Airways
- Trans-Canada Air Lines
- West Coast Airlines

AVIATION INSURANCE AGENCY, INC.

ATLANTA AIRPORT ATLANTA, GEORGIA

POplar 7-8656

HARVEY W. WATT, Pres.
(Capt. Eastern Air Lines)

W. M. GRISSOM, Vice-Pres.
(Capt. Delta Air Lines)

London Representative
STEWART SMITH & CO., LTD.

* Copyright 1957